

STATE OF CALIFORNIA

DRINKING WATER PROGRAM ANNUAL COMPLIANCE REPORT

CALENDAR YEAR 2023



JULY 2024

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Report Summary

Introduction

The State Water Resources Control Board (State Water Board) - Division of Drinking Water (DDW) is the primacy agency responsible for the administration and enforcement of the federal Safe Drinking Water Act (SDWA) requirements in California. The State Water Board has adopted statutes and regulations to implement the requirements of the SDWA. The State Water Boards' regulatory responsibility over public water systems includes (1) issuance of operating permits, (2) conducting inspections and sanitary surveys, (3) monitoring for compliance with regulations, and (4) taking enforcement action to compel compliance when violations are identified.

Throughout the year and as part of the DDW's regulatory oversight responsibilities, Drinking Water Program staff from DDW's 28 Districts and 27 Local Primacy Agencies (LPAs) document and record violations incurred by public water systems. Please refer to Appendix A for more information on the role of LPAs.

Enforcement actions are issued by the Drinking Water Programs to address these violations. The data is compiled and submitted to the United States Environmental Protection Agency (USEPA) on a quarterly basis.

This report presents an accounting of the violations record for the calendar year 2023. The USEPA requires states to issue this Annual Compliance Report by July 1st of each year and make the report available to the public. The Annual Compliance Report summarizes the compliance status for the following rules from the National Primary Drinking Water Regulations:

Table 1: National Primary Drinking Water Regulations Rules

Chemical (Phase II/V) Rule	Radionuclide Rule (RAD)
<ul style="list-style-type: none"> Inorganic contaminants (IOC) 	Surface Water Treatment Rules (SWTR)
<ul style="list-style-type: none"> Synthetic organics (SOC) Volatile organics (VOC) 	<ul style="list-style-type: none"> Surface Water Treatment Rule Filter Backwash Rule (FBR)
Consumer Confidence Report Rule (CCR)	<ul style="list-style-type: none"> Interim Enhanced SWTR (IESWTR)
Disinfectants and Disinfection By-Products Rule (DBPR)	<ul style="list-style-type: none"> Long Term 1 Enhanced SWTR (LT1) Long Term 2 Enhanced SWTR (LT2)
<ul style="list-style-type: none"> Stage 1 DBPR Stage 2 DBPR 	Total Coliform Rule
Groundwater Rule (GWR)	<ul style="list-style-type: none"> Revised Total Coliform Rule (rTCR)
Lead and Copper Rule (LCR)	Variances and Exemptions (V/E)
Public Notification Rule (PN)	

The following types of violations are included in this report:

- Maximum Contaminant Level (MCL)
- Maximum Residual Disinfectant Level (MRDL)
- Treatment Technique (TT) Requirements
- Significant Monitoring and/or Reporting (M&R)
- Variances and Exemptions (V/E)
- Recordkeeping
- Significant Public Notification (PN) Requirements
- Significant Consumer Confidence Report (CCR) Notifications

This report also presents an account of violations of state-regulated chemicals and other state SDWA requirements that are recorded by the DDW; these are summarized separately in the report as required by USEPA guidelines. The discussion, figures, and summaries provided in this report refer to the National Primary Drinking Water Regulations unless stated otherwise. Where California has more stringent standards, violations of the more stringent standards are reported.

The Violations Overview below shows a summary of violations, while Chapters 2 and 3 give details on violation categories and contaminants. Please refer to Appendix A for definitions and Appendix B for health effects language.

Violations Overview

In 2023, 1,829 violations of the National Primary Drinking Water Regulations were incurred by public water systems for federally regulated contaminants. Violations are recorded by DDW and LPAs providing oversight of public water systems; however, there may be violations that were not identified in this report. DDW is working to improve violation reporting and to advance data extraction methods to eliminate potential errors for subsequent reports. Of the 1,829 federal SDWA violations recorded, 773 were MCL/TT violations and 1,056 were M&R violations.

Table 2 shows the number of violations by category for MCL/TT and M&R requirements that occurred in 2022 and 2023 and the percent change between the two years.

Table 2: Number of Federal Violations by Category and Violation Type

No.	Category	2022 MCL /TT	2023 MCL /TT	% Change MCL/TT	2022 M&R	2023 M&R	% Change M&R
1	Inorganic Contaminants	523	500	-4%	179	256	+43%
2	Synthetic Organic Contaminants	8	2	-75%	4	152	+3700%

No.	Category	2022 MCL /TT	2023 MCL /TT	% Change MCL/TT	2022 M&R	2023 M&R	% Change M&R
3	Volatile Organic Contaminants	0	0	0%	4	42	+950%
4	Radionuclide Contaminants	57	77	+35%	4	14	+250%
5	Revised Total Coliform Rule	39	39	0%	426	195	-54%
6	Disinfection By-Products Rule	103	83	-19%	86	57	-34%
7	Surface Water Treatment Rules	32	70	+119%	6	24	+300%
8	Groundwater Rule	0	0	0%	48	14	-71%
9	Lead and Copper Rule	1	2	+100%	844	182	-78%
10	Public Notification Rule	---	---	---	32	24	-25%
11	Consumer Confidence Report Rule	---	---	---	268	91	-66%
12	Variances and Exemptions	---	---	---	2	5	+150%

Drinking water regulations impose more stringent requirements on community water systems (CWSs) and nontransient noncommunity water systems (NTNCs) specifically because the people served by these systems obtain all or a majority of their water from that system each day. To that end, CWSs and NTNCs need to meet additional California-specific requirements, covered in California Code of Regulations, Title 22, beyond those imposed by USEPA. Table 3 below summarizes the number of violations of California-specific regulated chemicals, as well as other state requirements such as certification of distribution system and treatment operators, which are not included in federal regulations.

Table 3: Number of California-specific Violations by Category and Violation Type

No.	Category	2022 MCL/TT	2023 MCL/TT	2022 M&R	2023 M&R	2022 Other	2023 Other
1	Inorganic Contaminants	80	26	36	33	---	---
2	Synthetic Organic Contaminants	219	169	25	34	---	---
3	Volatile Organic Contaminants	0	0	0	12	---	---
4	Secondary Standards	66	143	3	4	---	---
5	Operator Certification - Failure to have an operator at the appropriate certification level	---	---	---	---	45	25
6	Waterworks Standards - Failure to comply with a Waterworks Standard	---	---	---	---	88	76
7	Permits - Violation of a permit condition	---	---	---	---	96	72
8	Permits - Operating without a permit	---	---	---	---	14	13
9	Annual Report - Failure to submit an Annual Report to DDW	---	---	138	219	---	---
10	Cross-Connection Control	---	---	---	---	16	38
11	Treatment Technique	19	11	2	0	---	---
12	Point of Use/Point of Entry	4	4	---	---	---	---
13	Reporting Requirement	---	---	15	22	---	---

No.	Category	2022 MCL/ TT	2023 MCL /TT	2022 M&R	2023 M&R	2022 Other	2023 Other
14	Lead Service Line Inventory	---	---	0	0	---	---

In 2023, the Drinking Water Program issued approximately 2,629 formal enforcement actions to public water systems for failing to comply with either federal or state drinking water regulations. An enforcement action can address one or more violations, and require public notification requirements as necessary, corrective actions, and deadlines that the public water system must meet in order to “return to compliance” (RTC).

Of all the public water systems that had federal maximum contaminant level or treatment technique violations incurred in 2023 or prior, 20% of them have returned to compliance in 2023. Overall, 35% of public water systems that incurred a federal monitoring and/or reporting violation returned to compliance in 2023. DDW continues to monitor the compliance status of public water systems, working to identify and track public water systems that do not meet drinking water standards and provide technical assistance as well as take appropriate and effective enforcement measures and other addressing actions to ensure that these public water systems are working towards a path of compliance with the SDWA.

Obtaining a Copy of the Report

A copy of this Annual Compliance Report is available from the DDW’s webpage at https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Publications.html. You may also contact DDW at (916) 449-5577 to obtain a copy of the report.

SAFER Dashboard

The State Water Board released the Safe Affordable Funding for Equity and Resilience (SAFER) Dashboard in 2022 to display the current list of Failing and At-Risk public water systems and the results of the Risk Assessment for public water systems. The Dashboard displays risk drivers for public water systems, incorporating data from the State Water Board, the Department of Water Resources, and the Office of Environmental Health Hazard Assessment. The Dashboard is used by internal staff and members of the public to identify and explore Failing and At-Risk public water systems and how they perform in the following risk categories: water quality, accessibility, affordability, and TMF (technical, managerial, and financial) capacity. The Dashboard can be viewed at:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/saferdashboard.html.

Annual Compliance Report

Chapter 1. Overview of the Drinking Water Program

1.1. Safe Drinking Water Act

Under the 1974 federal SDWA and subsequent amendments in 1986 and 1996, the USEPA sets national limits on contaminant levels in drinking water for human consumption to protect the health of consumers. These limits are known as maximum contaminant levels (MCL) and maximum residual disinfectant levels (MRDL). For some regulations, treatment techniques (TT) or action levels (AL) have been established in lieu of an MCL as a means to control levels of specific contaminants in drinking water. Public water systems are also regulated as to the frequency of monitoring and the reporting (M&R) of water quality or rule compliance. Water systems can incur a violation for failure to collect required samples during a monitoring period (monitoring violations) or failure to report sample results or rule compliance in the required manner (reporting violations).

The SDWA requires public water systems to notify their consumers when a drinking water standard has been violated, including MCL, TT, AL, and M&R requirements. This notification is required to include:

- A clear and understandable explanation of the nature of the violation and when it occurred.
- Any potential adverse health effects from the violation.
- The steps that the water system is undertaking to correct the violation.
- The possible use of alternative water supplies available during the violation.

There are three basic types of violations that a water system can incur:

- Violation of a Maximum Contaminant Level (MCL): Drinking water standards have been adopted by the State Water Board for contaminants that may be found in drinking water supplies in California. These limits are known as MCLs and are necessary to protect the public from acute and chronic health risks associated with consuming water containing these contaminants.
- Violation of a Treatment Technique (TT): Treatment techniques and performance standards have been adopted as means to provide safe drinking water in instances where adoption of a specific MCL may be impractical or impossible. Treatment techniques are a proven means to reduce the risk from various contaminants by closely controlling the treatment processes.
- Violation of a Monitoring and/or Reporting Requirement (M&R): A water system is required to monitor and verify that the levels of contaminants present in the drinking water supplies do not exceed a MCL, MRDL, AL, or TT. A monitoring violation occurs when a water system fails to have its water tested as required within the

required time frame. A reporting violation occurs when a water system fails to report test results in a timely manner to the regulatory agency or fails to provide certification that mandated information was provided to the public, such as through the issuance of a public notice or the annual Consumer Confidence Report.

1.2. Annual Compliance Report

Section 1414(c)(3) of the federal SDWA requires states to provide the USEPA and the public with an annual report of violations of the federally adopted drinking water standards. This report provides the numbers of violations in each of six categories: MCLs, MRDLs, treatment techniques, variances and exemptions, significant monitoring and/or reporting violations, and significant public or consumer notification violations. Significant monitoring and/or reporting violations occur when no samples are taken, or no results are reported during a compliance period. A significant public notification or CCR notification violation occurs when a public water system completely fails to provide the required notification to its customers or to the public.

California adopted more stringent MCLs than the federally adopted drinking water standards for several contaminants, summarized in Table 4. Reported MCL violations for contaminants listed in this table are violations of the more stringent California standards.

Table 4: Regulated Contaminants Where California MCLs Are More Stringent Than Federal MCLs

Contaminant	CA MCL	Federal MCL	Units
<i>Inorganic Contaminants:</i>			
• Barium	1	2	mg/L
• Chromium	0.05	0.1	mg/L
• Cyanide	0.15	0.2	mg/L
• Fluoride	2	4	mg/L
<i>Synthetic Organic Contaminants:</i>			
• Atrazine	0.001	0.003	mg/L
• Carbofuran	0.018	0.04	mg/L
• Chlordane	0.0001	0.002	mg/L
• Di (2-ethylhexyl) phthalate	0.004	0.006	mg/L
• Heptachlor	0.00001	0.0004	mg/L
• Heptachlor Epoxide	0.00001	0.0002	mg/L
• Methoxychlor	0.03	0.04	mg/L
• Oxamyl	0.05	0.2	mg/L
<i>Volatile Organic Contaminants:</i>			

Contaminant	CA MCL	Federal MCL	Units
• Benzene	0.001	0.005	mg/L
• Carbon Tetrachloride	0.0005	0.005	mg/L
• 1,4-Dichlorobenzene	0.005	0.075	mg/L
• 1,2-Dichloroethane	0.0005	0.005	mg/L
• 1,1-Dichloroethylene	0.006	0.007	mg/L
• cis-1,2-Dichloroethylene	0.006	0.07	mg/L
• trans-1,2-Dichloroethylene	0.01	0.1	mg/L
• Ethylbenzene	0.3	0.7	mg/L
• Monochlorobenzene	0.07	0.1	mg/L
• Toluene	0.15	1	mg/L
• 1,2,4 Trichlorobenzene	0.005	0.07	mg/L
• Vinyl Chloride	0.0005	0.002	mg/L
• Xylenes	1.75	10	mg/L

This report does not address private domestic wells serving individual homes and facilities that are not public water systems, including state small water systems (water systems having between 5 and 14 service connections) that are not regulated under the California SDWA.

1.3. Federal Program

The USEPA established the Public Water System Supervision Program under the authority of the 1974 SDWA. Under the SDWA and the 1986 Amendments, USEPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs) and Maximum Residual Disinfectant Levels (MRDLs). For some regulations, USEPA establishes Treatment Techniques (TT) in lieu of an MCL to control unacceptable levels of contaminants in water. The USEPA also regulates how often public water systems monitor their water for contaminants and report the monitoring results to the states or USEPA. Generally, the larger the population served by a water system, the more extensive and frequent are the monitoring and reporting (M&R) requirements. In addition, the USEPA requires selected CWSs and NTNCs (see Section 1.6., Public Water Systems, for water system type explanations) to monitor for unregulated contaminants to provide data for future regulatory development. Finally, the USEPA requires public water systems to notify their consumers when they have violated these regulations. The 1996 Amendments to the SDWA among other things require consumer notification to include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the public water system is undertaking to correct the violation, and the possibility of alternative water supplies during the violation.

The SDWA allows states, tribes, and territories to seek USEPA approval to administer their own Public Water System Supervision Programs. The authority to run a Public Water System Supervision Program is called primacy. For a state to receive primacy, USEPA must determine that the state meets certain requirements laid out in the SDWA and the federal regulations, including the adoption of drinking water regulations that are at least as stringent as the federal regulations and a demonstration that they can enforce the program requirements.

1.4. California Program

California’s Drinking Water Program was created in 1915, when the California Bureau of Sanitary Engineering was established by the California State Board of Health. The bureau’s primary duty at that time was to prevent and eliminate water-borne diseases.

Two years after the 1974 federal SDWA was passed, the state adopted the California SDWA. The state’s SDWA has two main goals: to continue the state’s Drinking Water Program, and to be delegated primacy by USEPA with authority for enforcement of the federal SDWA. California was first granted primacy for implementation of the federal SDWA on June 2, 1978.

The Drinking Water Program was transferred in its entirety from the California Department of Public Health to the State Water Board on July 1, 2014. The State Water Board Division of Drinking Water (DDW) oversees the implementation of the SDWA over public water systems within California. The State Water Board has further delegated regulatory authority through an agreement with County Environmental Health Departments. Currently, 27 counties in California have retained primacy as a Local Primacy Agency (LPA) under delegation agreements issued and signed in 2014 and amended in 2017. These LPAs oversee the state’s SDWA compliance of small public water systems that serve fewer than 200 service connections within their county jurisdictions.

1.4.1. California-Specific Drinking Water Standards

This report provides a separate summary and accounting of violations of state-regulated contaminants that are not federally regulated. A list of these California-specific regulated contaminants is presented in Table 5. Discussion of California-specific violations is provided in Sections 3.2 and 3.5.

Table 5: Contaminants Additionally Regulated Under the California SDWA

<p><i>Inorganic Contaminants</i></p> <ul style="list-style-type: none"> • Perchlorate • Aluminum • Nickel <p><i>Synthetic Organic Contaminants</i></p>

- Bentazon
 - Molinate
 - Thiobencarb
 - 1,2,3-Trichloropropane
- Volatiles Organic Contaminants*
- Methyl tert-butyl ether (MTBE)
 - 1,1-Dichloroethane
 - 1,3-Dichloropropene
 - 1,1,2,2-Tetrachloroethane
 - Trichlorofluoromethane
 - 1,1,2-Trichloro-1,2,2-trifluoroethane

Additionally, the DDW maintains violation records of California-specific drinking water standards, including the following:

1. Revised Total Coliform Rule (rTCR) - In July 2021, DDW updated the state bacteriological regulations (formerly CA TCR) to reflect the federal rTCR. Bacteriological safety of California drinking water is now monitored through the rTCR federal requirements.
2. Secondary Standards - California regulates the contaminants or water quality constituents in the following table for aesthetic effects, including taste, odor, and appearance. CWS sources must be monitored for these contaminants on a regular basis to determine compliance with Secondary MCLs, which are also called “consumer acceptance contaminant levels” (or “consumer acceptance contaminant level ranges” for certain constituents).

Contaminants with Secondary MCLs:

- | | |
|----------------------------------|--------------------------------|
| • Aluminum | • Silver |
| • Color | • Thiobencarb |
| • Copper | • Turbidity |
| • Foaming Agents (MBAS) | • Zinc |
| • Iron | • Total Dissolved Solids (TDS) |
| • Manganese | • Specific Conductance |
| • Methyl-tert-butyl ether (MTBE) | • Chloride |
| • Odor | • Sulfate |

3. DDW collects violation information for the following state requirements:
 - Operator Certification (OP) – failure of a public water system to have an operator certified by the state at the appropriate certification level
 - Waterworks Standards (WW) – failure to comply with the California Waterworks Standards
 - Permit Condition (PC) – violation of a permit condition

- Valid Public Water System Permit (PT) – operating a public water system without a permit
- Annual Report (AR) – failure to submit an annual report to the Drinking Water Program
- Cross-Connection Control (CC) – failure to comply with the Cross-Connection Control Regulations
- Treatment Technique (TT) – failure to provide the required process intended to reduce the level of a contaminant in drinking water as specified in the public water systems’ water supply permit
- Reporting Requirement (RR) – failure to submit a compliance report to the Drinking Water Program, including those related to the school lead sampling program or PFAS (California Health and Safety Code (CHSC) section 116277)
- Point of Use/Point of Entry (POU/POE) – maximum contaminant level violation for treatment devices serving a single water tap or a single building
- Lead Service Line Inventory (LSL) – failure to comply with the requirements of CHSC section 116885

1.5. Data Presented in This Report

The data presented in this Annual Compliance Report is from the state’s Safe Drinking Water Information System (SDWIS-State), the database of record for the inventory and compliance data required to support California’s Drinking Water Program and reporting to the USEPA. In past years, DDW used data downloaded from USEPA (SDWIS/FED) that was previously uploaded by DDW to USEPA. Due to the complex data handling process between the agencies, DDW has found inaccuracies in the information retrieved from SDWIS/FED. DDW’s Data Management Unit provides technical support for reporting and data cleanup activities. While DDW continues efforts to improve the quality of the data reported to USEPA to ensure data extractions provide accurate and useful information, DDW has determined that data retrieved from SDWIS-State is the most accurate dataset to use as the basis of this and future Annual Compliance Reports.

DDW continues to upload data each quarter from SDWIS-State to USEPA. The data submitted include, but are not limited to, public water system inventory information; information on MCL, MRDL, monitoring and reporting, and treatment technique violations for regulated contaminants; violations concerning public and consumer notification; information on enforcement activities related to these violations; and data associated with the Lead and Copper Rule. USEPA regional offices also report federal enforcement actions taken against state-regulated public water systems.

The 2023 Annual Compliance Report lists federal violations by the following categories:

1. Inorganic Contaminants (IOC)
2. Synthetic Organic Contaminants (SOC)
3. Volatile Organic Contaminants (VOC)
4. Radionuclide Contaminants (RAD)
5. Revised Total Coliform Rule (rTCR)
6. Disinfectants and Disinfection By-Products Rule (DBPR), including Stage 1 DBPR and Stage 2 DBPR
7. Surface Water Treatment Rule (SWTR), including the Filter Backwash Rule, Interim Enhanced SWTR, Long Term 1 Enhanced SWTR, and Long Term 2 Enhanced SWTR
8. Groundwater Rule (GWR)
9. Lead and Copper Rule (LCR)
10. Public Notification Rule (PN)
11. Consumer Confidence Report Rule (CCR)
12. Variances and exemptions (V/E)

1.6. Public Water Systems

A public water system (PWS) is defined as a system for the provision of water for human consumption, through pipes or other constructed conveyances, that has 15 or more service connections or regularly serves at least 25 individuals daily for at least 60 days out of the year.

Public water systems are divided into three principal classifications: community water systems (CWSs), nontransient noncommunity water systems (NTNCs), and transient noncommunity water systems (TNCs).

Community water systems serve at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents of the area served by the system. Examples include water districts, cities, mutual water companies, mobile home parks, and farm labor housing.

Nontransient noncommunity water systems are public water systems that provide water to at least 25 of the same persons over six months per year but not year-round. Examples include day cares, schools, and places of employment.

Transient noncommunity water systems are systems that provide water for a population that is transient in nature, serving 25 or more people per day for at least 60 days per year. Examples include campgrounds, parks, ski resorts, roadside rest areas, or gas stations and motels.

A **wholesale water system** means a public water system that supplies water to other public water systems for resale. These wholesale water systems are regulated as community water systems.

DDW and LPAs together regulate a total of 7,288 public water systems in California (as of April 2024). The LPAs are responsible for regulatory oversight of approximately 3,104 small public water systems in 27 counties. This regulatory responsibility includes tasks such as issuance of operating permits, conducting sanitary surveys, monitoring for compliance with regulations, issuing enforcement actions to compel compliance when violations are identified, and reporting on those actions taken.

Figure 1 shows the number of public water systems in each of the classifications described above. CWSs are further classified by size, as shown in Figure 2. Regulations sometimes specify different requirements, such as monitoring requirements, for different sizes and types of water systems.

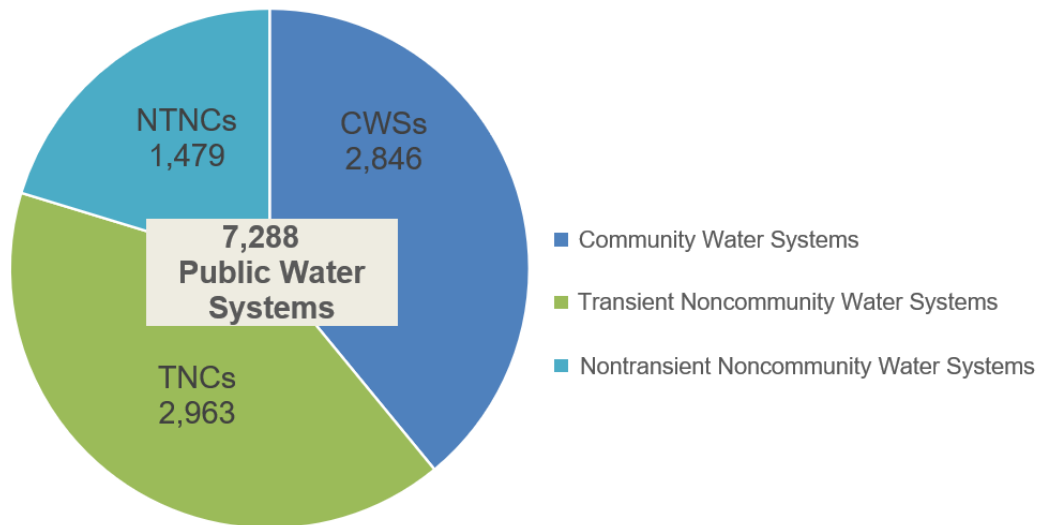


Figure 1: Number of public water systems by system classification (as of April 2024).

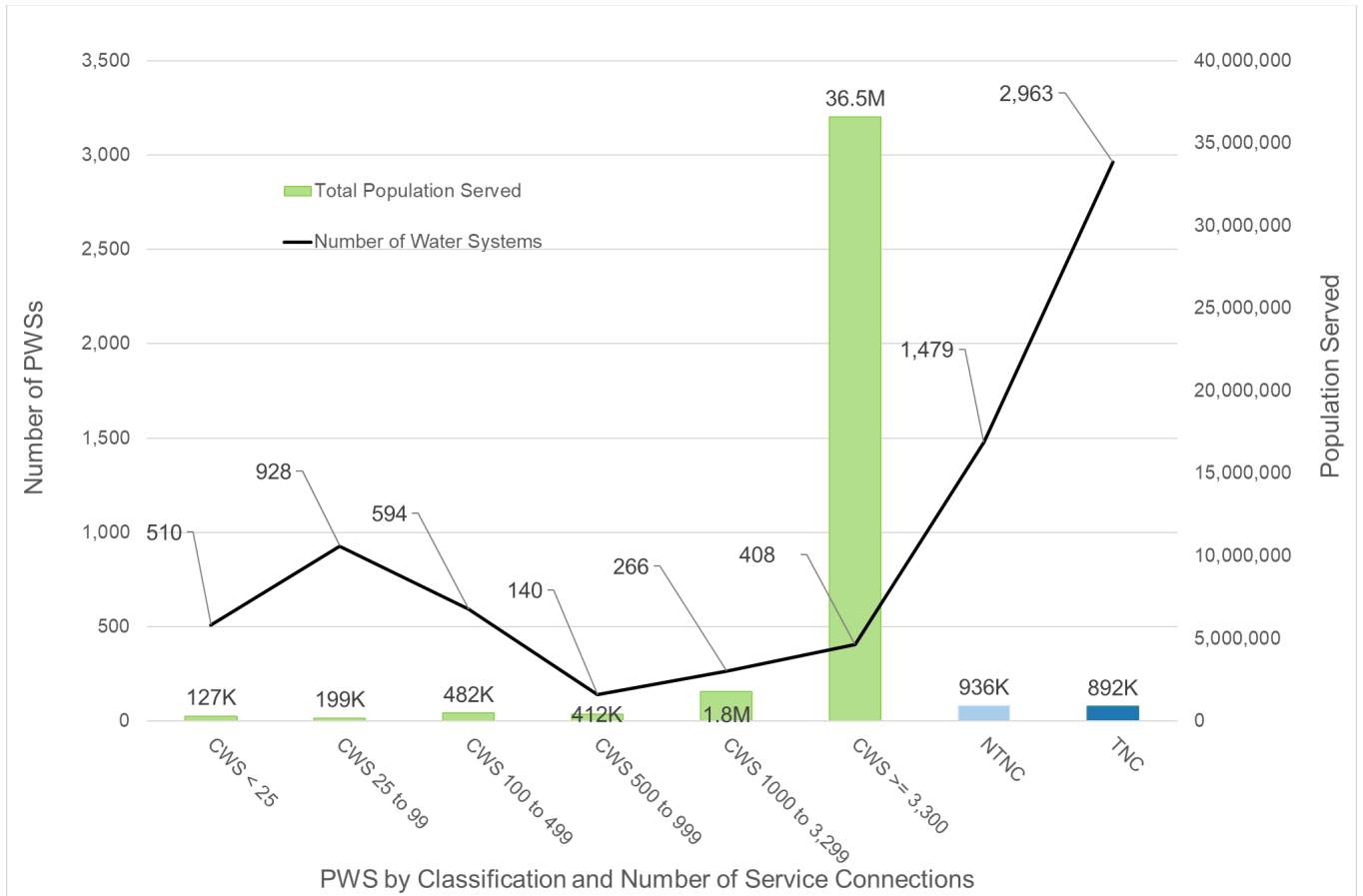


Figure 2: Categories of public water systems by size (as of April 2024). Note: These numbers may not match the overall state population due to potential double counting based on water system classification.

While CWSs serving 3,300 or more service connections make up around 15% of the total number of CWSs, they provide water to 92% of the population served by CWSs.

Table 6 shows how many public water systems are in each size range, categorized by the number of connections served by the water system, and the total population that is served by water systems of that size range. Population figures are based on information submitted by public water systems. Public water systems use a variety of methods to estimate the population served that are not always derived from census counts (especially for the smaller water systems). A wholesale water system is a public water system that delivers some or all of its finished drinking water to another public water system. Some wholesale water systems also directly serve finished drinking water to customers through a small number of service connections. The population directly served by these wholesale water systems is reflected in Table 6 under each service connection category. The total population listed here is the number served by public water systems statewide. There may be incidents where population is counted twice depending on the type of public water system (e.g., populations that attend or work at a school may also be counted in a nearby community water system).

Table 6: Number of Community Water Systems* Statewide and Population Served (as of April 2024)

Number of Service Connections	Number of Water Systems	Total of Population Served
3,300 or more	407	36,457,701
1,000 to 3,299	265	1,802,046
500 to 999	140	411,914
100 to 499	589	481,590
25 to 99	921	189,781
Fewer than 25	469	126,842
Wholesale Water Systems	55	324,365
Total	2,846	39,794,239

*Number of community water systems differs from what is depicted in Figure 2 because wholesalers are listed separately.

1.7. Sources of Drinking Water

Figure 3 shows the primary types of water sources that public water systems use to supply drinking water to their customers. Some regulations are applied differently for surface water and groundwater sources, and there are specific regulations in place that pertain to the treatment of surface water.

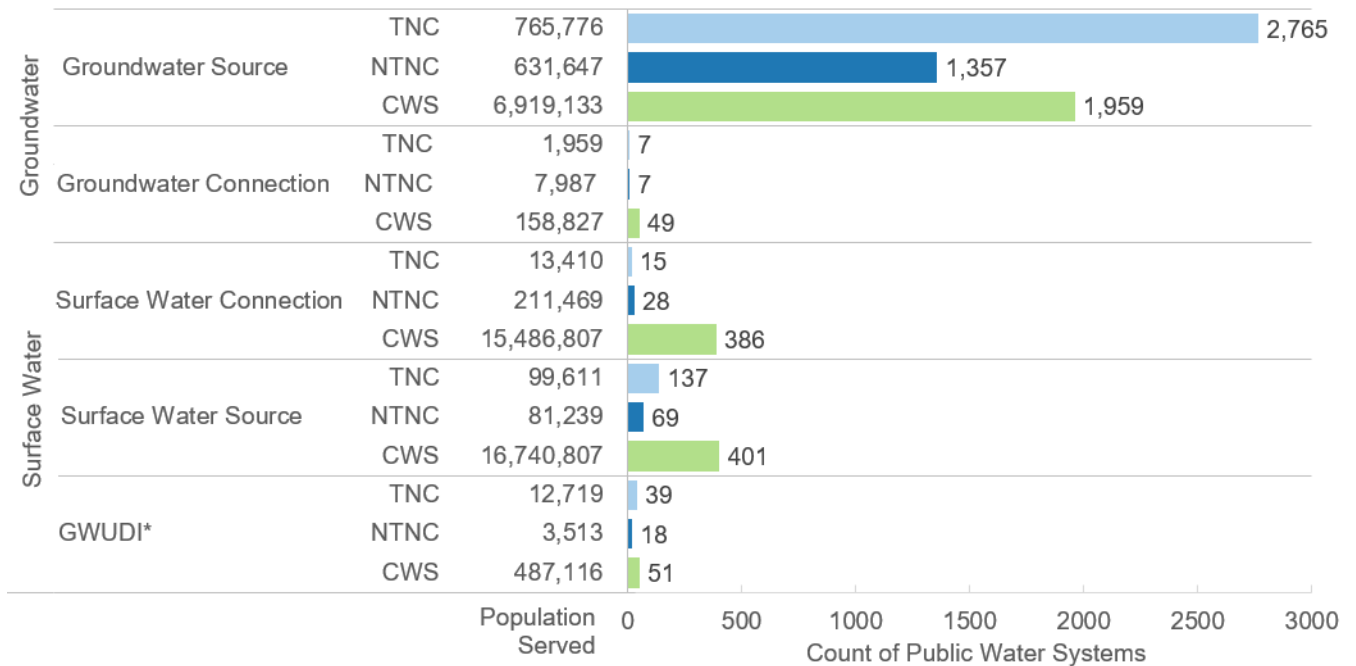


Figure 3: Primary sources of drinking water used by public water systems (as of April 2024), showing population served and corresponding count of water

systems by type (*GWUDI: groundwater under the direct influence of surface water sources).

Most public water systems in California use groundwater as their primary source of supply, but those that use surface water serve most of the population. Public water systems that use both groundwater sources and surface water sources are categorized as surface water systems by convention. Groundwater under the direct influence of surface water (GWUDI) sources are categorized as surface water per regulations. Many public water systems do not operate their own sources and rely on interconnections with neighboring public water systems to supply potable drinking water to their customers and are classified as a consecutive connection water system with a source type matching the wholesale provider.

Although about 84% of public water systems use only groundwater, these water systems serve about 20% of the population. Sixteen percent (16%) of public water systems use surface water or a combination of surface water and groundwater, and these public water systems supply 80% of the population.

Chapter 2. Review of 2023 Violation Data

Public water systems must conduct monitoring on a routine basis for regulated contaminants and to satisfy treatment technique requirements to document that the water provided meets the drinking water standards. Data and compliance information must be submitted to DDW and LPAs, including submissions of summaries and compliance status, as prescribed by regulations. DDW and LPAs track the violations incurred by public water systems in the SDWIS-State database. Major violations described below are summarized in this section. Violation data are included in Appendix C of the report.

- Maximum Contaminant Level (MCL)
- Maximum Residual Disinfectant Level (MRDL)
- Treatment Technique (TT) Requirements
- Significant Monitoring and/or Reporting (M&R)
- Variances and Exemptions (V/E)
- Recordkeeping
- Significant Public Notification (PN) Requirements
- Significant Consumer Confidence Report (CCR) Notifications

2.1. Overview of Violations for Calendar Year 2023

In 2023, 1,829 violations for federally regulated contaminants or rules were incurred by public water systems, with 773 violations for failing to meet an MCL/TT and 1,056 violations for failing to meet a M&R requirement. Violations are recorded by the Districts and LPAs providing oversight of public water systems; however, there may be violations that were not identified in this report due to data entry issues. DDW is working to

improve violation reporting and data extraction methods to eliminate potential errors for subsequent reports. Table 7 shows the number of violations by category for MCL/TT and M&R requirements that occurred in 2021, 2022 and 2023. The counts of MCL/TT violations show some reduction as a result of DDW’s continuous efforts to provide safe drinking water to Californians. Ongoing efforts include providing increased funding towards those water systems to support projects addressing ongoing violations and prioritization for support under the Safe Affordable Funding for Equity and Resilience (SAFER) program. The highest number of MCL/TT violations incurred in 2023 is for violation of MCLs for inorganic contaminants, followed by violation of a Disinfection By-Products Rule and Radionuclide Contaminants requirement. The high number of MCL violations for inorganic contaminants were primarily due to nitrate and arsenic. The highest number of M&R violations were for inorganic contaminants, the revised Total Coliform Rule, the Lead and Copper Rule, as well as synthetic organic contaminants.

Table 7: Number of Federal Violations by Rule Category for Maximum Contaminant Levels / Treatment Techniques (MCL/TT) and Monitoring and/or Reporting Requirements (M&R)

No.	Category	2021 MCL /TT	2022 MCL /TT	2023 MCL /TT	2021 M&R	2022 M&R	2023 M&R
1	Inorganic Contaminants	524	525	500	238	179	256
2	Synthetic Organic Contaminants	5	8	2	1	4	152
3	Volatile Organic Contaminants	0	0	0	5	4	42
4	Radionuclide Contaminants	66	57	77	8	4	14
5	Revised Total Coliform Rule	26	39	39	377	426	195
6	Disinfection By-Products Rule	97	102	83	72	86	57
7	Surface Water Treatment Rules	29	32	70	16	6	24
8	Groundwater Rule	3	0	0	34	48	14
9	Lead and Copper Rule	3	1	2	521	844	182

No.	Category	2021 MCL /TT	2022 MCL /TT	2023 MCL /TT	2021 M&R	2022 M&R	2023 M&R
10	Public Notification Rule	---	---	---	30	32	24
11	Consumer Confidence Report Rule	---	---	---	216	268	91
12	Variances and Exemptions	---	---	---	2	2	5

Figure 4 shows the classification and sizes of public water systems (as represented by the number of service connections) that incurred one or more MCL/TT violations in 2023. CWSs that incurred at least one MCL/TT violation in 2023 represented 6% of the total number of active CWSs in the state. About 92% of the MCL/TT violations were incurred by NTNCs, TNCs, and CWSs that serve fewer than 500 service connections.

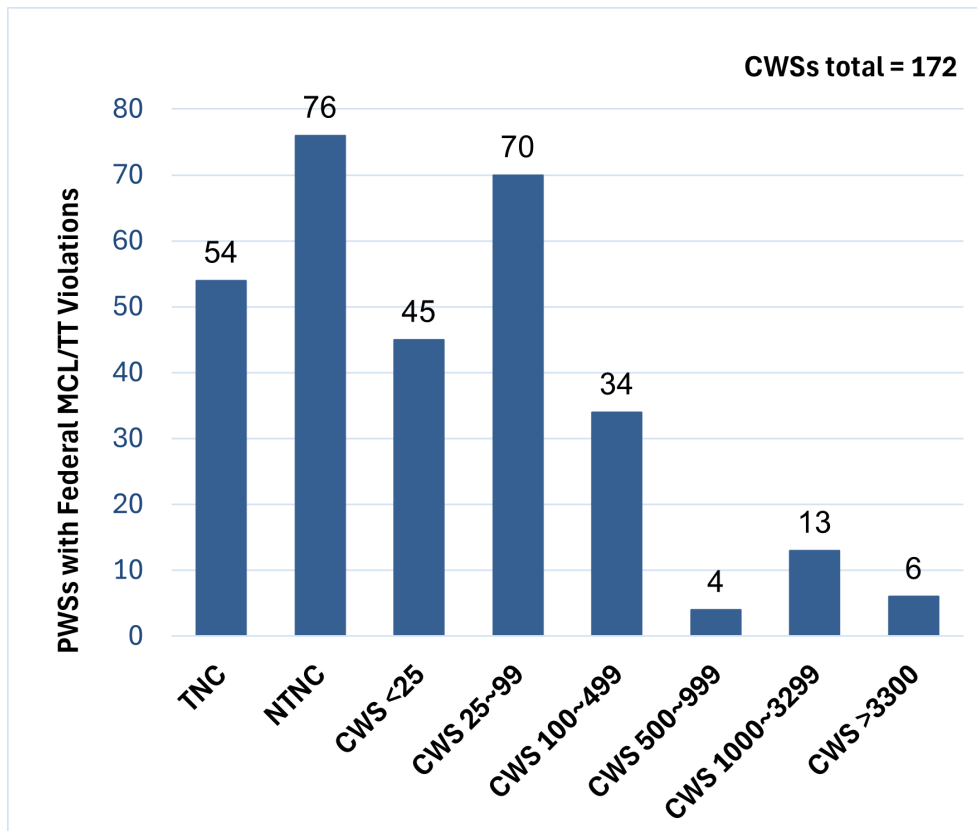


Figure 4: Number of public water systems by classification and size (as service connections) with MCL or TT violations in 2023.

In 2023, about 901 violations of California-specific drinking water standards were incurred by public water systems, with 353 violations for failing to meet an MCL/TT, 324

violations for failing to meet a monitoring or reporting requirement, and 224 violations of other California SDWA requirements that are currently being tracked in SDWIS-State. Table 8 shows the number of violations by category for MCL/TT, M&R, and other requirements. The highest number of MCL/TT violations were for violations of the MCL for 1,2,3-trichloropropane (1,2,3-TCP).

Table 8: Number of California-specific Violations by Category for MCLs/TTs, M&R and other Requirements

No.	Category	2022 MCL/ TT	2023 MCL /TT	2022 M&R	2023 M&R	2022 Other	2023 Other
1	Inorganic Contaminants	80	26	36	33	---	---
2	Synthetic Organic Contaminants	219	169	25	34	---	---
3	Volatile Organic Contaminants	0	0	0	12	---	---
4	Secondary Standards	66	143	3	4	---	---
5	Operator Certification - Failure to have an operator at the appropriate certification level	---	---	---	---	45	25
6	Waterworks Standards - Failure to comply with a Waterworks Standard	---	---	---	---	88	76
7	Permits - Violation of a permit condition	---	---	---	---	96	72
8	Permits - Operating without a permit	---	---	---	---	14	13
9	Annual Report - Failure to submit an Annual Report to DDW	---	---	138	219	---	---
10	Cross-Connection Control	---	---	---	---	16	38

No.	Category	2022 MCL/TT	2023 MCL/TT	2022 M&R	2023 M&R	2022 Other	2023 Other
11	Treatment Technique	19	11	2	0	---	---
12	Point of Use/Point of Entry	4	4	---	---	---	---
13	Reporting Requirement	---	---	15	22	---	---
14	Lead Service Line Inventory	---	---	---	0	0	---

2.2. Overview of Public Water System Compliance for Calendar Year 2023

In 2023, 808 public water systems violated at least one federal drinking water standard with 302 public water systems violating one or more MCL/TTs, 557 public water systems violating one or more M&R requirements, and 60 public water systems violating both MCL/TTs and M&R requirements. Total violations also include 21 PN and/or VE violations.

Table 9 shows that about 92% of the MCL or TT violations were incurred by NTNCs, TNCs, and CWSs serving fewer than 500 service connections. About 57% of public water systems that incurred an MCL or TT violation in 2023 were CWSs. The CWSs are categorized by number of service connections.

Table 9: Number of Public Water Systems with One or More Federal MCL/TT or M&R Violation by Water System Type (CWS by Service Connections)

Number of Service Connections	Number of PWSs, Federal MCL/TT Violations	Number of PWSs, Federal M&R Violations
CWS - 3,300 or more	6	16
CWS - 1,000 to 3,299	13	13
CWS - 500 to 999	4	12
CWS - 100 to 499	34	65
CWS - 25 to 99	70	98
CWS - Fewer than 25	45	51
NTNC	76	122
TNC	54	180
Total	302	557

Table 10 summarizes the number of water systems with violations of maximum contaminant levels, treatment techniques, and monitoring and reporting for the past three years.

Table 10: Number of Public Water Systems* with MCL, TT, and/or M&R Violations

No.	Category	MCL and/or TT			M&R		
		<u>2021</u> # of PWSs	<u>2022</u> # of PWSs	<u>2023</u> # of PWSs	<u>2021</u> # of PWSs	<u>2022</u> # of PWSs	<u>2023</u> # of PWSs
1	Inorganic Contaminants	181	175	189	212	146	195
2	Synthetic Organic Contaminants	2	3	1	1	4	7
3	Volatile Organic Contaminants	0	0	0	5	2	2
4	Radionuclide Contaminants	21	21	22	3	3	5
5	Revised Total Coliform Rule	25	35	38	251	309	153
6	Disinfection By-Products Rule	41	45	33	43	58	34
7	Surface Water Treatment Rules (SWTR)	16	24	34	4	4	5
8	Groundwater Rule	3	0	0	28	41	12
9	Lead and Copper Rule	3	1	2	355	573	163
10	Public Notification Rule	---	---	---	0	17	16
11	Consumer Confidence Rule	---	---	---	158	199	63
12	Variances and Exemptions	---	---	---	0	2	5

* Some water systems may be represented in more than one violation category.

Chapter 3. Discussion of Violations

This section contains summary information on violations of MCLs and TTs. More specific information on the quality of water provided by a public water system can be obtained by requesting a copy of the Consumer Confidence Report (CCR) that all CWSs and NTNCs are required to issue to their customers annually. To obtain a copy of a CCR, customers may contact the public water system serving the area. Many public water systems also post their CCR online. The State Water Board provides access to the CCRs received from public water systems on the CA Drinking Water Watch webpage at <https://sdwis.waterboards.ca.gov/PDWWW/>. The CA Drinking Water Watch webpage also provides access to public water system contact information, water quality data, and violation and enforcement information. When a public water system has violated a drinking water standard, the public water system is required to provide a public notice to their consumers and make copies of the notice available upon request to others.

3.1. Federal Maximum Contaminant Level / Treatment Technique Violations

3.1.1. Inorganic Contaminants (IOCs)

All CWSs and NTNCs are required to meet drinking water standards for 18 inorganic contaminants. TNCs must monitor and comply with the MCLs for nitrate and nitrite. A total of 500 violations of inorganic contaminant MCLs were recorded for the year, as summarized in Table 11.

Table 11: Summary of Inorganic Contaminates MCL Violations and Public Water System Counts

Contaminant	Violation Category	Number of Violations	Number of PWSs
Arsenic	MCL	211	70
Fluoride	MCL	1	1
Mercury	MCL	3	1
Nitrate	MCL	271	118
Nitrite	MCL	1	1
Selenium	MCL	13	4
Total		500	189*

* The total number of public water systems may be less than the sum of the public water systems of each contaminant listed, since a public water system may have violations of more than one contaminant.

Arsenic - In 2023, 70 public water systems incurred 211 arsenic MCL violations. Arsenic violations accounted for about 42% of all inorganic chemical MCL violations in 2023. The arsenic MCL is 0.010 mg/L, and compliance with the arsenic MCL is determined based on a running annual average. When a public water system exceeds the arsenic MCL, it must provide public notice to its customers of the violation, potential health impacts of the contaminant, and when the public water system will return to compliance with the MCL, among other things. A public water system must continue to provide public notification on a quarterly basis until such a time as the public water system is able to comply with the MCL.

The major sources of arsenic in drinking water are from erosion of natural deposits. Other sources of arsenic may include runoff from orchards and wastes from glass and electronics production.

Figure 5 shows the areas in the state where public water systems have incurred arsenic MCL violations in 2023.

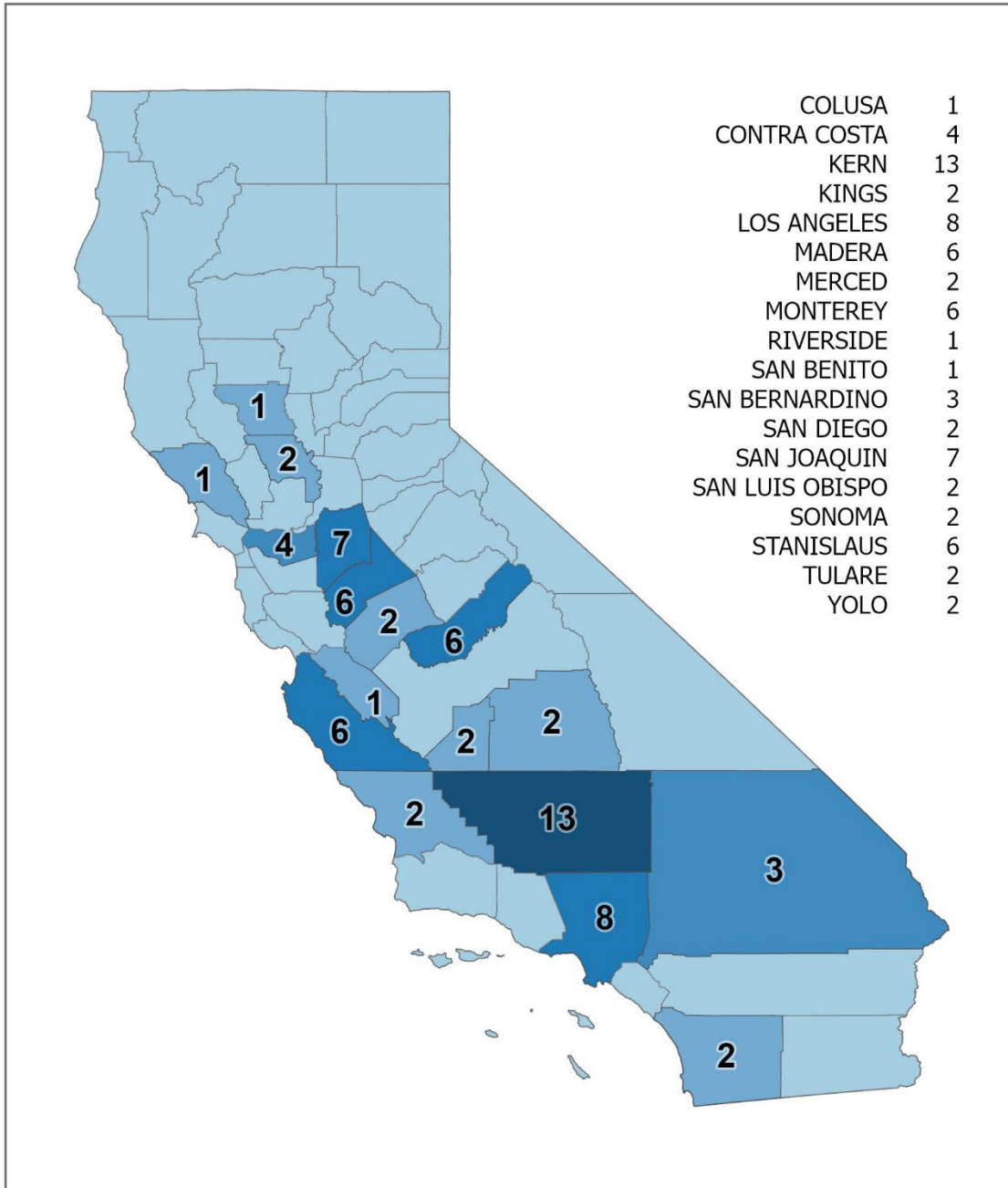


Figure 5: The number of public water systems with arsenic MCL violation(s) in each county.

Fluoride - In 2023, one (1) public water systems incurred 1 fluoride violation against the federal fluoride MCL in San Bernardino County. The MCL for fluoride in California is 2 mg/L, which is lower than the 4 mg/L federal MCL; there are California-specific fluoride violations recorded in Section 3.2. The major source of naturally occurring fluoride in drinking water is erosion of natural deposits. Sources of fluoride

associated with human activities include discharges from fertilizer and aluminum processing facilities.

Because fluoride also has a beneficial effect in preventing dental caries (tooth decay), some communities may add fluoride to their drinking water (fluoridation). Where fluoridation is practiced, fluoride concentrations are maintained at the optimal level for reduction of dental caries which is well below the state MCL.

Mercury In 2023, one (1) PWS incurred three (3) violations that exceeded the mercury MCL of 2 ug/L. This PWS is in Stanislaus County. In the United States, mercury compounds are manufactured in small amounts for specialty uses, such as chemical and pharmaceutical applications. Mercury may also be present from erosion of natural deposits or runoff from landfills and cropland. Mercury in groundwater may be due to leakage from some submersible pumps.

Nitrate (including nitrite and nitrate+nitrite combined) - In 2023, 118 public water systems incurred 271 nitrate MCL violations in 19 counties, and one (1) nitrite MCL violation in Lake County, accounting for 54% of all inorganic chemical MCL violations in 2023. Nitrate and nitrite are commonly found in fertilizers used in farming and gardening. Nitrates are also found in sewage and waste from humans, animals, and some industrial processes, and may be a result of erosion of natural deposits. Contamination from nitrate and nitrite is usually the result of human activities. There are few mineral deposits containing naturally occurring nitrate or nitrite in California.

Expert medical advice and an alternate source of drinking water are recommended if one suspects nitrate levels may be a cause for concern. Local and state health authorities are the best sources for information concerning alternate sources of drinking water. The State Water Board has set the drinking water standard at 10 mg/L nitrate (measured as nitrogen, or 'N'), 1 mg/L for nitrite (measured as N), and 10 mg/L nitrate+nitrite (sum as N) to protect against the risk of these adverse effects. Drinking water that meets the drinking water standard is associated with little to no risk for nitrate or nitrite toxicity and is considered safe with respect to those compounds.

Due to the acute health effects of nitrate and nitrite, an MCL violation is incurred if the average of a sample result and the confirmation sample result exceeds the MCL. The confirmation sample must be collected within 24 hours of notification by the laboratory that a sample exceeded the MCL. If a confirmation sample is not collected within 24 hours of notification, the PWS is immediately in violation of the MCL, and must therefore issue a public notice to its customers as soon as possible within 24 hours, informing the public of the violation, including key information such as the potential health impacts, what the PWS is doing to correct the problem, and what the public can do to protect their health in the interim.

Figure 6 shows the areas in the state where public water systems have incurred nitrate MCL violations in 2023.

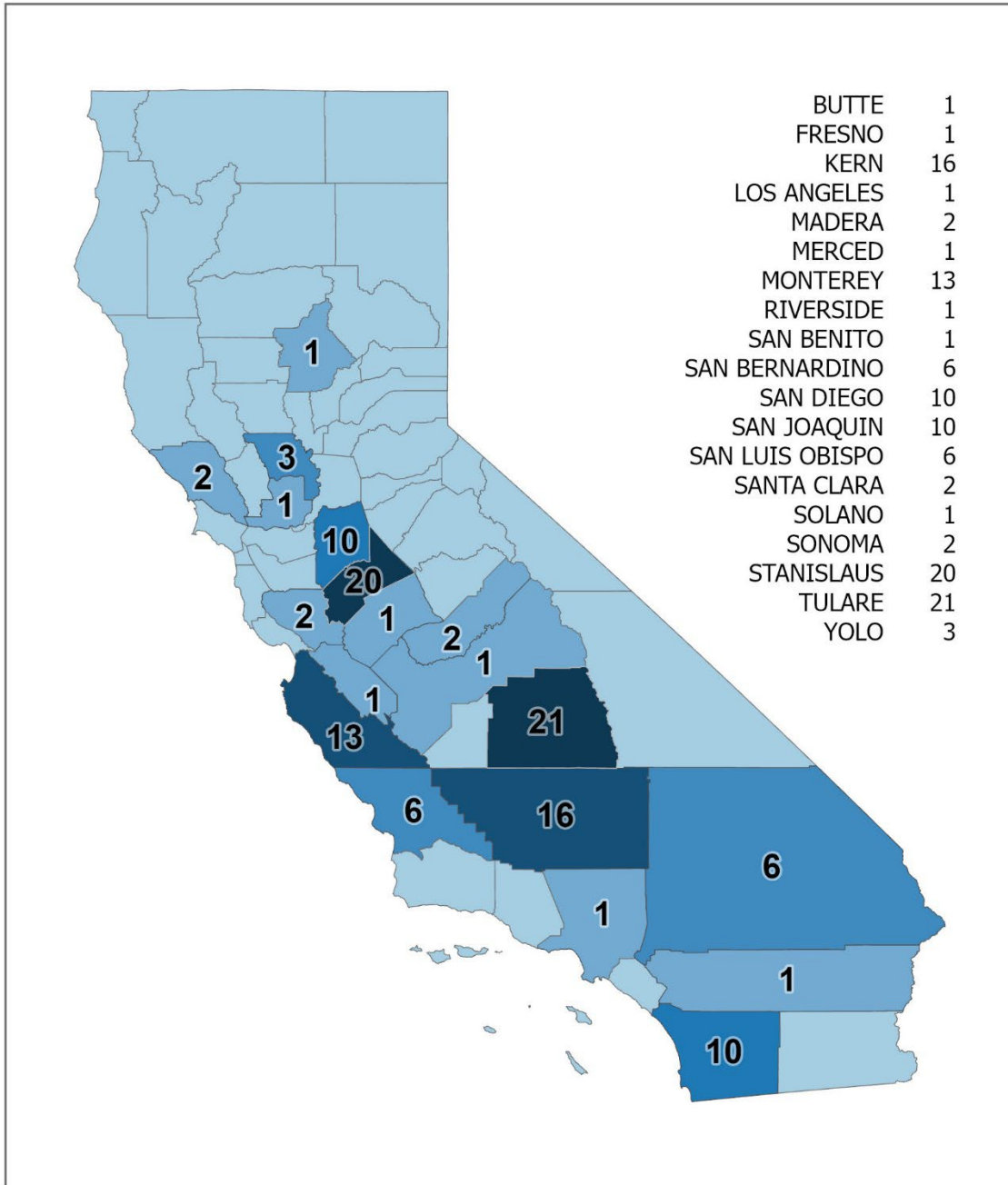


Figure 6: The number of public water systems with nitrate MCL violations in each county.

Public water systems that incur nitrate or nitrite MCL violations generally take measures to provide other sources of drinking water or install treatment if they have the capability to do so. Public water systems that do not have the capacity to return to compliance with the MCL must at least provide regular (at least quarterly) public notification to their customers so that the public can take action to protect their health.

Selenium - In 2023, four (4) public water systems incurred 13 selenium MCL (50 ug/L) violations. These public water systems are in San Diego, San Luis Obispo, and Santa Barbara Counties. Sources of selenium are discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; or runoff from livestock lots where selenium is used as a feed additive.

3.1.2. Synthetic Organic Contaminants (SOCs)

CWSs and NTNCs are required to meet drinking water standards for up to 33 synthetic organic contaminants (SOCs). Waivers from monitoring can be granted. Of the 33 SOC, three (3) are California-specific (not federally regulated); violations for the California-specific SOC are discussed in Section 3.2.

Table 12: Summary of Synthetic Organic Contaminates MCL Violations and Public Water System Counts

Contaminant	Violation Category	Number of Violations	Number of PWSs
DBCP	MCL	2	1

During 2023, there were two (2) violations of the 1,2-Dibromo 3-Chloropropane (DBCP) MCL of 0.2 ug/L. The violations were incurred by one (1) CWS in Madera County. DBCP is a banned nematicide that may still be present in soils due to runoff/leaching from former use on soybeans, cotton, vineyards, tomatoes, and tree fruit.

3.1.3. Volatile Organic Contaminants (VOCs)

CWSs and NTNCs are required to comply with drinking water standards for 27 volatile organic contaminants (VOCs). In 2023, no MCL violations were reported for VOCs.

3.1.4. Radionuclide Rule (RAD)

CWSs and NTNCs are required to meet drinking water standards for six alpha-emitting radionuclide contaminants regulated under the Radionuclide Rule. Monitoring for beta particle and photon radioactivity is required only if the Division of Drinking Water determines that a source of water supply is vulnerable based on proximity to a nuclear facility. During 2023, there were 77 violations of radionuclide MCLs by 22 public water systems in Kern, Madera, Plumas, San Bernardino, San Diego Counties, Stanislaus, and Madera Counties. Radionuclide MCL violations were for gross alpha particle activity and combined uranium.

Table 13: Summary of Radionuclide MCL Violations and Public Water System Counts

Contaminant	Violation Category	Number of Violations	Number of PWSs
Combined Uranium	MCL	66	20
Gross Alpha Particle Activity	MCL	11	5
Totals		77	22*

* The total number of public water systems may be less than the sum of the public water systems of each contaminant listed, since a public water system may have violations of more than one contaminant.

The major source of uranium in drinking water is from erosion of natural deposits. The State Water Board has set the drinking water standard for uranium at 20 pCi/L to protect against the risk of these adverse health effects. USEPA has set a federal drinking water standard for uranium at 30 ug/L, which is equivalent to the state MCL.

Figure 7 shows the areas in the state where public water systems have incurred radionuclide MCL violations in 2023.

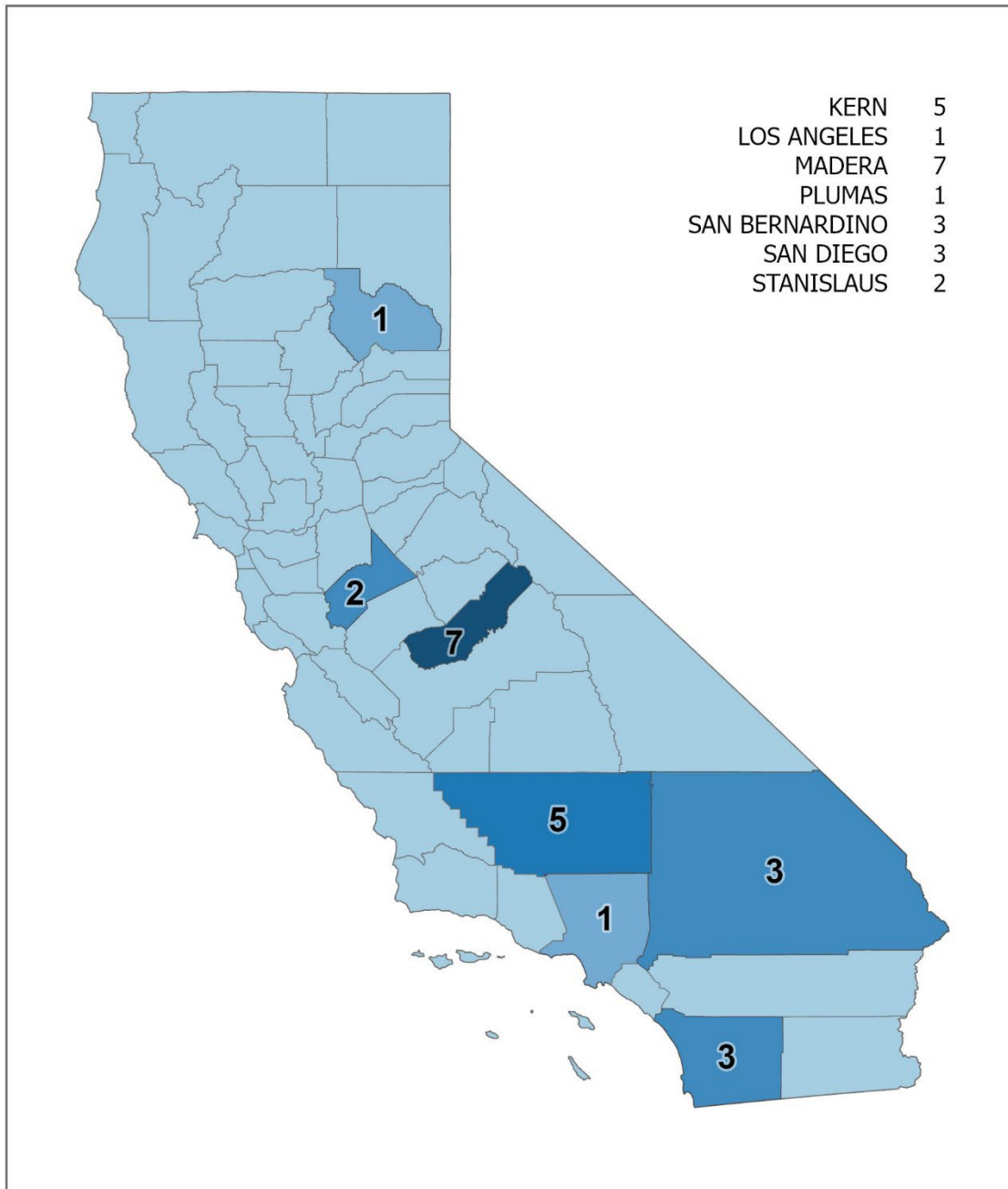


Figure 7: The number of public water systems with radionuclide MCL violation(s) in each county.

3.1.5. Revised Total Coliform Rule (rTCR)

All public water systems are required to comply with the Revised Total Coliform Rule (rTCR), which specifies monitoring of the water in the distribution system for the presence of coliform bacteria. The rTCR became effective on July 1, 2021, in California to replace the Total Coliform Rule (TCR). Coliforms are bacteria that are naturally

present in the environment and are used as an indicator that other, potentially harmful bacteria may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system.

CWSs are required to collect samples ranging from one sample per month to 120 samples per week in the water distribution system, depending on the size of the PWS. NTNC and TNC systems are generally on a monthly or quarterly sampling frequency. Whenever samples are total coliform-positive, repeat samples must be collected at that location and in surrounding areas and analyzed for fecal coliform or *E. coli* bacteria. Fecal coliform and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal waste.

The rTCR requires public water systems that have an indication of coliform contamination (e.g., as a result of total coliform positive (TC+) samples, *E. coli* MCL violations, performance failure) to assess the problem and take corrective action. There are two levels of assessments (i.e., Level 1 and Level 2) based on the severity or frequency of the problem:

- Level 1 Assessments
 - Triggered by 2 or more TC+ routine samples in a month for public water system collecting fewer than 40 samples per month (smaller public water systems), or greater than 5% TC+ samples in a month for PWS collecting 40 or more samples per month (larger public water systems); or
 - Triggered by a public water system failing to take every required repeat sample after any single TC+ sample.
- Level 2 Assessments
 - Triggered by a public water system incurring an *E. coli* MCL violation; or
 - Triggered by a public water system having a second Level 1 Assessment within a rolling 12-month period; or
 - Triggered by a public water system on state-approved annual monitoring having a Level 1 Assessment trigger in 2 consecutive years.

Since California revised the state's TCR regulation to incorporate rTCR in July 2021, bacteriological safety of California drinking water is now monitored through the rTCR federal requirements.

A public water system is in violation of the rTCR *E. coli* MCL or Coliform Treatment Technique requirements when any of the following occurs:

- *E. coli* MCL (acute)
 - Same criteria as the existing acute Total Coliform MCL conditions
- Coliform Treatment Technique

- Failure to complete the required corrective action(s) within the specified timeframe after identifying a sanitary defect in a Level 1 or Level 2 assessment.
- Failure to conduct the required assessment within 30 days after exceeding a treatment technique trigger.
- Failure of a seasonal system to complete the drinking water primacy agency-approved start-up procedure prior to serving water to the public.

The federally reported rTCR MCL/TT violations for 2023 are summarized in the table below.

Table 14: Summary of Revised Total Coliform Rule Violations and Public Water System Counts

Rule	Violation Category	Number of Violations	Number of PWSs
rTCR	<i>E. coli</i> MCL Violation	23	23
rTCR	TT – Level 1 Assessment	10	9
rTCR	TT – Level 2 Assessment	5	5
rTCR	TT – Failure to complete a seasonal start-up procedure	1	1
Total		39	38*

* The total number of public water systems may be less than the sum of the public water systems of each contaminant listed, since a public water system may have violations of more than one contaminant.

3.1.6. Disinfectants and Disinfection By-Products Rule (DBPR)

All CWSs and NTNCs that provide disinfected drinking water are required to comply with the Stage 1 and Stage 2 Disinfectants and Disinfection By-Products Rules (DBPR). Additionally, TNCs that use chlorine dioxide are required to comply with the requirements for chlorine dioxide. The DBPR established MCLs for four by-products of drinking water disinfection - total trihalomethanes (TTHMs), haloacetic acids (HAA5), bromate, and chlorite; maximum residual disinfectant levels (MRDLs) for three disinfectants – chlorine, chloramine, and chlorine dioxide; TT requirements for the control of total organic carbon (TOC), a disinfection byproduct precursor in surface water sources using conventional surface water treatment; TT requirements for minimum disinfectant residual levels and TT requirements for certified treatment operators.

TTHM and HAA5 MCL violations occur when the locational running annual average (LRAA) exceeds the MCL. The determination of a chlorite MCL violation is complex and can occur under a combination of the following scenarios: whether an entry point sample exceeded the MCL, whether a routine or triggered distribution system sample

exceeded the MCL, whether confirmation samples were collected or whether they confirmed the original sample result, and whether consecutive entry point samples exceeded the MCL.

The DBPR MCL and TT violations are summarized in Table 15 below. In 2023, 33 public water systems incurred 83 MCL/TT violations. Eight (8) public water systems violated both TTHM and HAA5 MCLs in 2023.

Table 15: Summary of Disinfection By-Products Rule Violations and Public Water System Counts

Rule	Violation Category	Number of Violations	Number of PWSs
DBPR	MCL, LRAA – Haloacetic Acids (HAA5)	44	17
DBPR	MCL, LRAA – Total Trihalomethanes (TTHM)	37	22
DBPR	TT, Stage 1 Qualified Operator Failure	2	2
Total		83	33*

* The total number of public water systems may be less than the sum of the public water systems of each contaminant/rule listed, since a public water system may have violations of more than one violation category.

As a requirement of the DBPR, water systems must have a certified operator if they are adding chemical disinfectant to the water in any part of the drinking water treatment process. In 2023, there were a total of two (2) violations from two (2) water systems which failed to have a certified operator under the DBPR requirement.

3.1.7. Surface Water Treatment Rules (SWTR)

The surface water treatment rules include the Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Long-term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR), Long-term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), and the Filter Backwash Rule. These rules establish monitoring and reporting requirements, treatment techniques, performance standards, and turbidity standards to be met by public water systems using surface water as a drinking water source. As used in this report, the term “surface water” also includes groundwater that has been determined to be under the direct influence of surface water (GWUDI).

Treatment techniques and performance standards are used to establish water quality objectives instead of MCLs for microbiological contaminants that may be found in surface waters, including *Giardia lamblia*, *Cryptosporidium parvum*, Legionella, heterotrophic plate count bacteria, and viruses. Public water systems that use surface water are required to provide multiple levels of treatment (termed ‘multi-barrier’

treatment) to protect against adverse health effects from microbiological contaminants. All multi-barrier treatment systems must include the use of an approved filtration technology as a first barrier, and a reliable disinfection system as a second barrier. Some public water systems can avoid filtration by meeting special requirements including rigorous standards on their source water quality and watershed controls. These public water systems must still disinfect their water.

The following table summarizes the TT violations of the surface water treatment rules. In 2023, 34 public water systems incurred 70 treatment technique violations of the surface water treatment rules, such as failure to meet the turbidity requirements for filtration or failure to provide the required level of disinfection treatment.

Table 16: Summary of Surface Water Treatment Rules Violations and Public Water System Counts

Rule	Violation Category	Number of Violations	Number of PWSs
SWTR	TT – Failure to filter	60	27
SWTR	TT– Residual Disinfectant Concentration	5	5
LT2ESWTR	TT – Failure to provide LT2 treatment	3	3
IESWTR	TT– Uncovered storage facility	2	1
Total		70	34*

* The total number of public water systems may be less than the sum of the public water systems of each contaminant/rule listed, since a public water system may have violations of more than one violation category.

3.1.8. Groundwater Rule (GWR)

All public water systems that use groundwater, such as wells or springs, must comply with the Groundwater Rule (GWR) to reduce the occurrence of disease associated with microorganisms in drinking water derived from groundwater. The GWR establishes a risk-based approach to target groundwater systems that are vulnerable to fecal contamination. Groundwater systems that are identified as being at risk of fecal contamination must take corrective action to reduce potential illness from exposure to microbial pathogens.

Special monitoring of the groundwater source for a fecal indicator microorganism must be conducted whenever a sample collected in the water distribution system pursuant to the rTCR is positive for total coliform (triggered source monitoring). California has chosen to use *E. coli* monitoring as the indicator of fecal contamination. There were no GWR violations in 2023.

3.1.9. Lead and Copper Rule (LCR)

All CWSs and NTNCs must comply with the Lead and Copper Rule (LCR). The LCR requires that “first draw” tap samples be collected for lead and copper analysis from sites (typically single-family homes or multi-family residences for CWSs) that are at risk of containing lead pipes or copper pipe with lead solder, or which may be served by a lead service line. Samples are often collected by the occupants who live at the residences prioritized for sampling. Public water systems are required to collect the samples from sites that meet the site selection criteria, send the samples to a certified laboratory for analysis, and report the results to DDW and the occupant of each residence sampled.

The action level for lead is 0.015 mg/L, and copper has an action level of 1.3 mg/L, based on the 90th percentile concentration in all samples collected during a sampling period. For each monitoring compliance period, public water systems must determine the 90th percentile lead and copper concentration calculated based on the results of all samples collected and determine whether the action levels for lead and copper are met. A finding that the 90th percentile lead or copper level is at a concentration above their respective action levels is not in itself a violation, but it triggers actions that public water systems must take - the PWS must take specified steps to evaluate the need for corrosion control treatment, including conducting an optimal corrosion control treatment (OCCT) study and/or a source water treatment (SOWT) study, and implementation of study recommendations. A PWS must replace lead service lines if it fails to install treatment or if the treatment fails to control lead levels. For lead action level exceedances, public water systems must conduct public education on the effects of lead and the ways that the public can reduce lead exposure.

The following table summarizes the LCR TT violations recorded for 2023.

Table 17: Summary of Lead and Copper Rule Violations and Public Water System Counts

Rule	Violation Category	Number of Violations	Number of PWSs
LCR	TT – Failure to install or demonstrate Optimal Corrosion Control (OCCT) or Source Optimal Water Treatment (SOWT)	2	2

Lead is generally present in drinking water as a result of internal corrosion of household plumbing or from lead fittings or service lines. It may also be present in source waters due to discharges from industrial manufacturers or erosion of natural deposits.

The major sources of copper in drinking water are from internal corrosion of household plumbing systems, erosion of natural deposits, and leaching from wood preservatives.

3.2. California-Specific Maximum Contaminant Level Violations

All CWSs and NTNCs are required to comply with drinking water standards contained in Title 22 California Code of Regulations. Contaminants with MCLs regulated by California but not regulated by USEPA include the following:

- Inorganic Contaminants:
 - Perchlorate
 - Aluminum
 - Nickel
- Synthetic Organic Contaminants:
 - Bentazon
 - Molinate
 - Thiobencarb
 - 1,2,3-Trichloropropane (1,2,3-TCP)
- Volatile Organic Contaminants:
 - Methyl tert-butyl Ether (MTBE)
 - 1,1-Dichloroethane
 - 1,3-Dichloropropene
 - 1,1,2,2-Tetrachloroethane
 - Trichlorofluoromethane
 - 1,1,2-Trichloro-1,2,2-trifluoroethane

In 2023, about 342 violations were incurred by public water systems for failing to meet an MCL of a California-regulated contaminant. The table below summarizes the violations of a MCL or secondary MCL for California regulated contaminants (see Section 1.4.1. for a list of the contaminants).

Table 18: Summary of California-Specific MCL Standards Violations and Public Water System Counts

Contaminant/Rule	Violation Category	Number of Violations	Number of PWSs
1,2,3-TCP	MCL	169	60
Aluminum	Primary MCL	2	2
Fluoride	MCL	21	8
Iron	Secondary MCL	49	13
Manganese	Secondary MCL	94	30
Perchlorate	MCL	3	2
POU/POE	MCL	4	4
Total		342	106*

* The total number of public water systems may be less than the sum of the public water systems of each contaminant/rule listed, since a public water system may have violations of more than one violation category.

1,2,3-Trichloropropane (1,2,3-TCP) - The State Water Board established a MCL for 1,2,3-TCP of 0.005 ppt (ug/L) on December 14, 2017. All CWSs and NTNCs must comply with the 1,2,3-TCP drinking water standards. These water systems started conducting initial monitoring of their sources in the first quarter of 2018.

1,2,3-TCP is used as an industrial solvent, paint and varnish remover, and cleaning and degreasing agent. It is also a byproduct of the production of pesticides and other compounds and was an impurity and inactive ingredient of soil fumigant pesticides historically used in California. The major sources of 1,2,3-TCP in drinking water include runoff/leaching of soil fumigant pesticides applied on agricultural lands and leaching from hazardous waste sites.

In 2023, 60 public water systems incurred 169 violations of the 1,2,3-TCP MCL. Figure 8 shows a map of all counties with the number of public water systems in each county that exceeded the 1,2,3-TCP MCL in 2023.

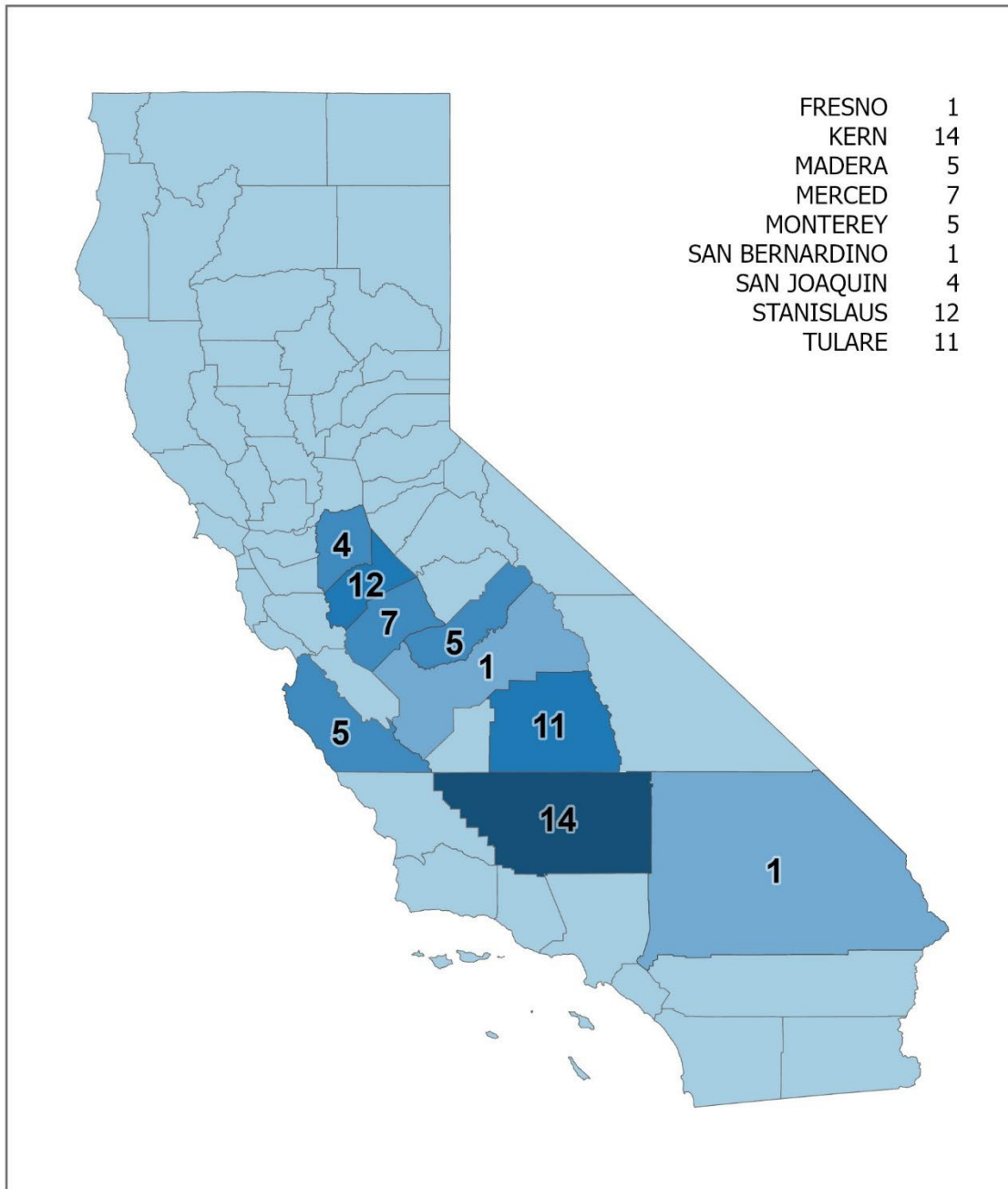


Figure 8: The number of public water systems with 1,2,3-TCP MCL violations in each county.

Aluminum – Two (2) primary MCL violations were incurred by two (2) public water systems in 2023. The sources of aluminum in drinking water are erosion of natural deposits, and residue from some surface water treatment processes.

Fluoride – Twenty-one (21) state MCL violations for fluoride were incurred by eight (8) public water systems in 2023. The less-stringent federal MCL for fluoride had a single violation by one water system, recorded under federal violations.

Iron – Secondary MCL violations were incurred by 13 public water systems in 2023. The sources of iron in drinking water are leaching from natural deposits, and industrial wastes.

Manganese – Secondary MCL violations were incurred by 30 public water systems in 2023. The source of manganese in drinking water is leaching from natural deposits.

Perchlorate - In 2023, three (3) violations were incurred by two (2) PWS for perchlorate MCL. The major sources of perchlorate in drinking water are solid rocket propellants, fireworks, explosives, flares, matches, and a variety of industries. Perchlorate usually gets into drinking water as a result of environmental contamination from historic aerospace or other industrial operations that use, store, or dispose of perchlorate and its salts.

POU/POE - In 2023, four (4) MCL violations were incurred by four (4) PWS using Point of Use/Point of Entry filtration, in all cases for nitrate. Use of point-of-use and point-of-entry treatment is limited to public water systems with fewer than 200 service connections and its use is permitted until centralized treatment is available.

3.3. Federal Public Notification, Consumer Confidence Report, Monitoring, and/or Reporting Violations

3.3.1. Public Notification (PN)

Public water systems are required to notify the people that are served by the water system whenever a violation of a drinking water standard occurs. Public notices are required to be issued immediately, usually within 24 hours, for violations of MCLs for contaminants with acute (short term) health effects. Examples of these include violation of the *E. coli* MCL, violation of the nitrate, nitrite, or combined nitrate and nitrite MCL, or violation of the perchlorate MCL. Public notices are issued for violations of drinking water standards for contaminants with chronic (long term) health effects, as soon as possible, usually within 30 days. Examples of these include violations of MCLs for arsenic, radioactivity, or organic chemicals. A violation occurs when there is a failure to provide the required notice to the public within the required time frame. There were 24 violations for failure to provide the required notice to the public in 2023.

Table 19: Summary of Public Notification Violations and Public Water System Counts

Rule	Violation Category	Number of Violations	Number of PWSs
Public Notice	Failure to provide public notification of a violation	24	16

3.3.2. Consumer Confidence Report Violations (CCR)

CWSs and NTNCs are required to provide their customers with a report each year of the quality of the water served by their water system during the prior calendar year. Each year’s Consumer Confidence Report (CCR) must also include information on the source(s) of drinking water, the levels of any detected contaminants, and compliance with drinking water regulations. Public water systems must describe any violations of the water quality standards in the CCR.

In 2023, 63 public water systems incurred violations for failure to prepare and distribute their CCR to their customers.

Table 20: Summary of Consumer Confidence Report Violations and Public Water System Counts

Rule	Violation Category	Number of Violations	Number of PWSs
CCR	Failure to prepare and deliver a CCR	91	63

3.3.3. Monitoring and/or Reporting Violations Other Than Consumer Confidence Report and Public Notification

Public water systems are required to monitor the water for specified contaminants at a required frequency and report the results to the DDW. Generally, the larger the population served by a water system, the more extensive and frequent are the monitoring and reporting (M&R) requirements. Finally, public water systems are required to notify their consumers when they have violated these regulations. The 1996 Amendments to the SDWA among other items require consumer notification to include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the public water system is undertaking to correct the violation, and the possibility of alternative water supplies during the violation.

In 2023, 521 public water systems incurred federal monitoring and/or reporting violations as shown in Table 21.

Table 21: Summary of Monitoring and/or Reporting Violations and Public Water System Counts by Rule

Rule	Violation Category	Number of Violations	Number of PWSs
IOC	MON	256	195
SOC	MON	152	7
VOC	MON	42	2
RAD	MON	14	5
rTCR	MON/RPT	195	153
DBPR	MON	57	34
SWTR	MON/RPT	24	5
GWR	MON	14	12
LCR	MON	182	163
Total		936	521*

* The total number of public water systems may be less than the sum of the public water systems of each rule listed, since a public water system may have violations of more than one contaminant.

3.4. Variance and Exemption Violations (V/E)

The State Water Board is authorized under the federal SDWA to issue variances and exemptions from meeting drinking water standards to public water systems under special circumstances. Five (5) public water systems incurred a violation of a variance or exemption in 2023 as shown in Table 22.

Table 22: Summary of Variance and Exemption Violations and PWS Counts

Violation Category	Number of Violations	Number of PWSs
V/E	5	5

3.5. State-Specific Monitoring and/or Reporting and Other Violations

There are 548 violations of California-specific monitoring, reporting and other violations in 2023, as listed in Table 23.

Table 23: Summary of California-Specific Monitoring and/or Reporting and Other Violations by Rule

Rule	Violation Category	Number of Violations	Number of PWSs
Inorganic Contaminants (IOC)	MON	33	12
Synthetic Organic Contaminants (SOC)	MON	34	18
Volatile Organic Contaminants (VOC)	MON	12	2
Secondary Standards	MON	4	1
Operator Certification (OP)	OTHR	25	22
Waterworks Standards (WW)	OTHR	76	52

Rule	Violation Category	Number of Violations	Number of PWSs
Permit, violation of condition (PC)	OTHR	72	49
Permit, operating without a permit (PT)	OTHR	13	12
Annual Report (AR)	RPT	219	199
Cross-Connection Control (CC)	OTHR	38	26
Treatment Technique (TT)	TT	0	0
Reporting Requirement (RR)	RPT	22	21
Total		548	383*

* The total number of public water systems may be less than the sum of the public water systems of each contaminant/rule listed, since a public water system may have violations of more than one violation category.

Chapter 4. Enforcement Activities

DDW and LPAs take enforcement actions when a public water system violates an MCL or treatment technique or fails to conduct the required monitoring and reporting activities.

Enforcement action is an essential element of DDW’s regulatory program to bring all public water systems into full compliance with drinking water standards and regulations to ensure that the public receives a safe and reliable supply of drinking water. Carrying out an enforcement program is a requirement of the primacy delegation from USEPA. DDW may take a variety of enforcement actions depending on the type of violation and recurrence of a violation that includes both formal and informal enforcement actions. Issuance of progressively more stringent enforcement actions is the means used to bring a non-responsive water system into compliance with drinking water standards.

DDW’s enforcement strategy for public water systems that violate a drinking water MCL includes issuance of formal enforcement action in a timely manner. The California Health and Safety Code (CHSC) section 116655(a) specifies that whenever the State Water Board determines that any person has violated or is violating the California SDWA or any permit, regulation, or standard issued or adopted pursuant to the California SDWA, the director may issue an order doing any of the following:

- 1) Directing compliance forthwith;
- 2) Directing compliance in accordance with a time schedule set by the State Water Board;
- 3) Directing that appropriate preventive action be taken in the case of a threatened violation.

Per CHSC section 116655(b), an order that DDW issues may include, but not be limited to, the following requirements:

- 1) That the existing plant, works, or system be repaired, altered or added to;
- 2) That purification or treatment works be installed;
- 3) That the source of water supply be changed;
- 4) That no additional service connection be made to the system;
- 5) That the water supply, the plant, or the system be monitored;
- 6) That a report on the condition and operation of the plant, works, system, or water supply be submitted to the State Water Board.

Formal enforcement actions available to DDW include citations, compliance orders, permit amendments, and revocation or suspension of an existing operating permit. The CHSC also authorizes assessing civil penalties up to \$25,000 per day for each day a drinking water standard violation occurs or placing a water system into receivership. DDW has implemented an enforcement strategy that includes the requirement for the PWS to submit a compliance plan within a short time frame that achieves compliance within a specified time period. Failure to achieve compliance within that time period may result in escalated enforcement, including issuance of civil penalties.

4.1. Enforcement Actions Taken

In 2023, the Drinking Water Program issued 2,629 formal enforcement actions. An enforcement action can be a notice of violation, a citation, or a compliance order. An enforcement action can address one or more violations and prescribe public notification requirements as necessary corrective actions and deadlines that the public water system must meet, in order to return to compliance (RTC).

Tables 25 and 26 show the number of federal and state violations, respectively, that were addressed by an enforcement action. Of the 2,730 violations (combined federal and state violations) that occurred in 2023, records show that over 96% were addressed with formal enforcement actions. The remaining violations were associated with an informal enforcement action, which is considered unaddressed and were mostly state regulated 1,2,3-TCP, the federally regulated LCR violations, rTCR monitoring, and failure to comply with California Waterworks Standards (WW).

Table 24: Number of Federal Violations Addressed with an Enforcement Action

No.	Category	Number of Federal Violations	Number of Federal Violations Addressed by Enforcement Action	Percent of Federal Violations Addressed by Enforcement Action
1	Inorganic Contaminants (IOCs)	756	749	99%
2	Synthetic Organic Contaminants (SOCs)	154	154	100%
3	Volatile Organic Contaminants (VOCs)	42	42	100%
4	Radionuclide Contaminants (RADs)	91	85	93%
5	Revised Total Coliform Rule (rTCR)	234	222	95%
6	Disinfection By-Products Rule (DBPR)	140	140	100%
7	Surface Water Treatment Rules (SWTR)	94	93	99%
8	Groundwater Rule (GWR)	14	14	100%
9	Lead and Copper Rule (LCR)	184	111	60%
10	Public Notification Rule (PN)	24	24	100%
11	Consumer Confidence Report Rule (CCR)	91	91	100%

No.	Category	Number of Federal Violations	Number of Federal Violations Addressed by Enforcement Action	Percent of Federal Violations Addressed by Enforcement Action
12	Variations and Exemptions (V/E)	5	5	100%

Table 25: Number of State Violations Addressed with an Enforcement Action

No.	Category	Number of State Violations	Number of State Violations Addressed by Enforcement Action	Percent of State Violations Addressed by Enforcement Action
1	Inorganic Contaminants (IOCs)	134	134	100%
2	Synthetic Organic Contaminants (SOCs)	203	203	100%
3	Volatile Organic Contaminants (VOCs)	12	12	100%
4	Secondary Standards	72	71	99%
5	Operator Certification - Failure to have an operator at the appropriate certification level (OP)	25	25	100%

No.	Category	Number of State Violations	Number of State Violations Addressed by Enforcement Action	Percent of State Violations Addressed by Enforcement Action
6	Waterworks Standards - Failure to comply with a Waterworks Standard (WW)	76	75	99%
7	Permits - Violation of a permit provision (PP)	72	72	100%
8	Permits - Operating without a permit (PT)	13	13	100%
9	Annual Report - Failure to submit an Annual Report to DDW (AR)	219	219	100%
10	Cross-Connection Control (CC)	38	38	100%
11	Treatment Technique (TT)	11	11	100%
12	Point of Use/Point of Entry (POU/POE)	4	4	100%
13	Reporting Requirement (RR)	22	22	100%

4.2. Enforcement Targeting Tool

In 2009, the USEPA implemented a new approach designed to identify public water systems that are in significant non-compliance. An Enforcement Targeting Tool (ETT)

was developed to prioritize public water systems that have incurred health-based violations and those that show a history of violations across multiple rules. An ETT score is calculated based on points assigned to the various types of violations, the severity of the violation (e.g., higher points are assigned for violations of drinking water standards associated with acute health effects than those associated with chronic health effects) and the duration of the violation. Public water systems with an ETT score of 11 or greater are prioritized for evaluation of enforcement strategy and resources required to ensure a return to compliance.

DDW coordinates with the USEPA to track the ETT scores and has reduced the number of public water systems that are identified as significant non-compliers. It was found that many violation records were not routinely updated after a PWS has returned to compliance, and this contributed to high ETT scores. DDW continues to work to ensure accurate and timely updates of inventory data for violations and enforcement actions, so that the ETT score accurately reflects the public water systems that are significant non-compliers.

4.3. Return to Compliance

When a public water system exceeds a drinking water standard, DDW and LPAs issue enforcement actions that prescribe what must be done in order for the public water system to return to compliance (RTC). The criteria for when RTC is achieved may depend on the rule, type of violation, and contaminant. For example, an MCL violation of a chemical with chronic health effects, RTC is achieved when the public water system stops providing water that exceeds the MCL, issues the public notification, and submits the information required in the enforcement action, such as a corrective action plan. Public water systems may inactivate the source that exceeds the MCL, provide an alternate source of water that complies with drinking water standards, or provide reliable treatment such that the treated source of supply complies with the MCL. Depending on factors such as the technical, managerial, and financial capacity (TMF) and resiliency of the public water system, the MCL violation can be resolved in a matter of days, or it can take years. Public water systems that remain out of compliance with the MCL are typically required to provide regular public notification and conduct increased monitoring until such time that the public water system returns to compliance with the MCL. Failures to conduct monitoring and public notification resulting from an MCL violation are also considered violations. Many violations on record are not consistently updated in the database even though the violations may have been resolved. The DDW continues to work on ways to efficiently conduct data maintenance activities (e.g., SDWIS clean-up reports).

Figure 9 shows the number of public water systems of each classification and CWS size that have returned to compliance in 2023 following a federal MCL/TT violation that was incurred in 2023 or prior years. This includes public water systems that are newly out of compliance in 2023; and public water systems that have been and continue to be out of

compliance from previous years. Overall, 20% of public water systems that incurred an MCL/TT violation returned to compliance in 2023.

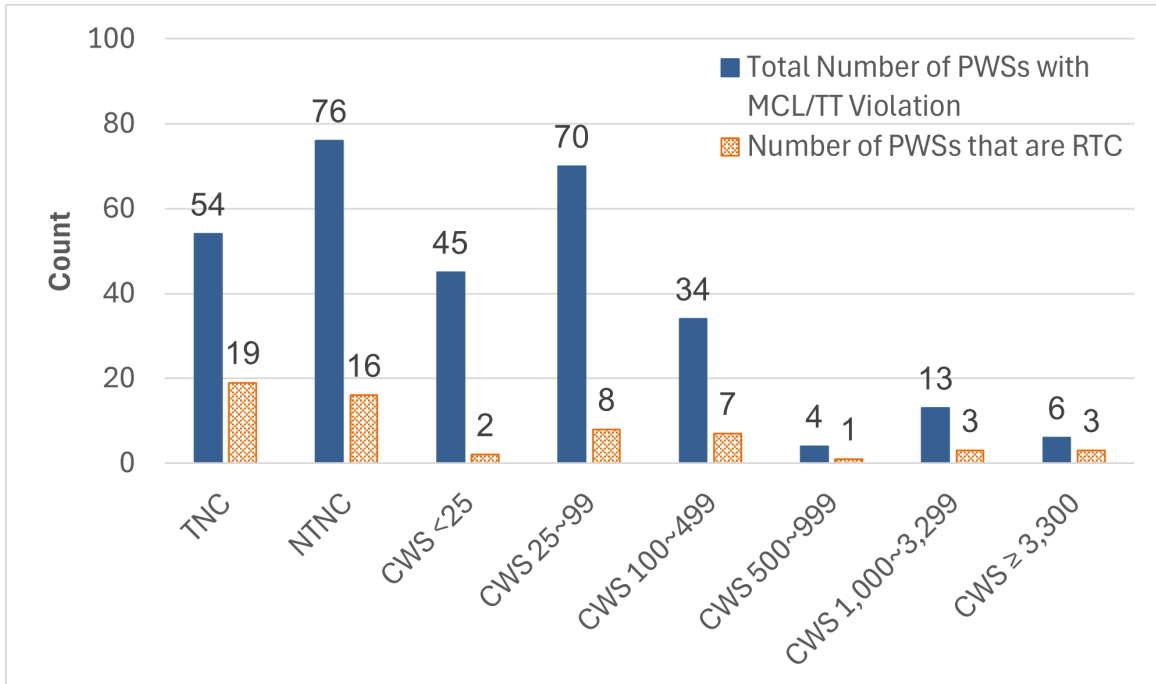


Figure 9: Number of PWSs that returned to compliance in 2023 for a federal MCL/TT violation.

For monitoring and reporting violations, the criteria for when RTC is achieved is generally when the delinquent samples are collected, when the report is submitted, or when the results reported to the State Water Board. Depending on the rule, RTC can be achieved within a month; for rules such as the LCR, where sampling must occur in specific periods of the year, delinquent samples may not be collected for several months.

Figure 10 below shows the number of public water systems of each classification and CWS size that have returned to compliance in 2023 following a federal monitoring or reporting violation that was incurred in 2023 or prior years. This includes public water systems that are newly out of compliance in 2023; and public water systems that have been and continue to be out of compliance from previous years. Overall, 35% of public water systems that incurred a monitoring/reporting violation returned to compliance in 2023.

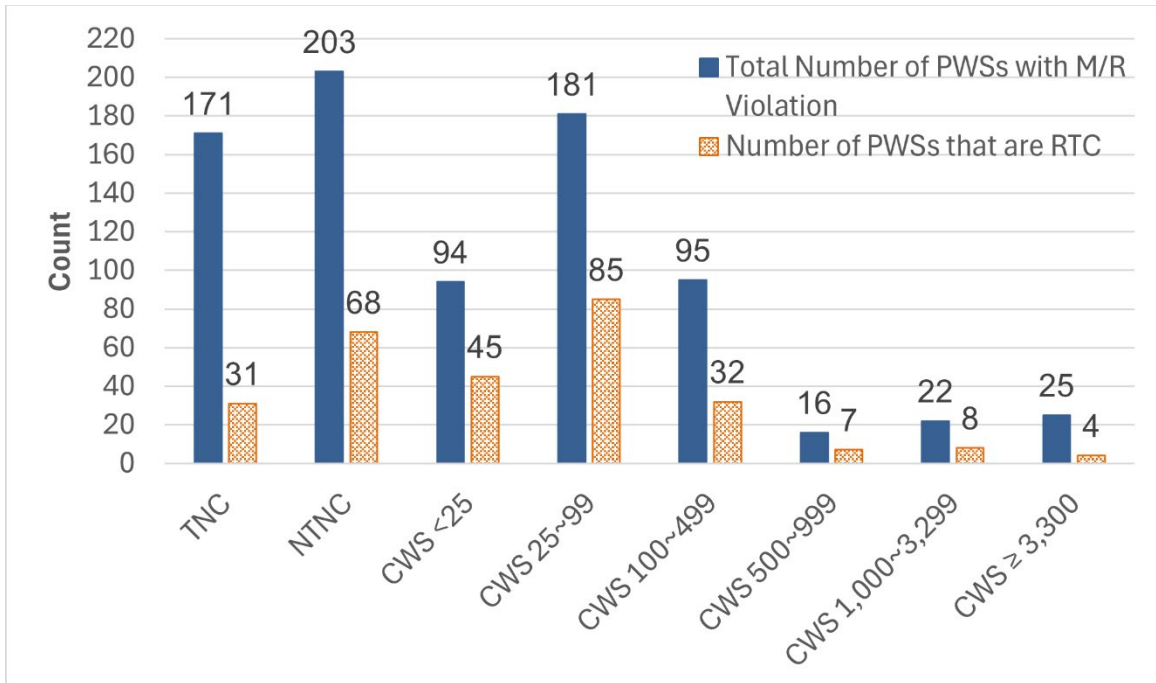


Figure 10: Number of public water systems that returned to compliance in 2023 for a federal M&R violation.

The rate of RTC is generally higher for monitoring and reporting violations than MCL/TT violations. Often the SDWIS-State records are not regularly updated by District/LPA staff to reflect when a PWS has returned to compliance. DDW has implemented a data clean-up report to correct data validation errors and update those records in SDWIS-State as needed to have an accurate compliance status. DDW continues to work to improve data procedures and data systems in order to ensure timely reporting of accurate compliance information for public water systems in SDWIS-State.

4.4. Other Drinking Water Program Compliance Activities

DDW has planned a number of activities and projects that will ultimately improve the reporting of violations and enforcement actions, improve data quality, as well as assist in returning public water systems to compliance after a violation has occurred.

DDW is updating and revising the 2025 Safe Drinking Water Plan, which will be submitted to the California Legislature by December 2025. The Safe Drinking Water Plan is a comprehensive assessment of drinking water in California which covers the quality and safety, types of problems that need to be addressed, overall health risks, current and projected costs, and current regulatory programs. The plan contains specific recommendations to address issues identified and improve the overall quality and safety of California's drinking water. More information about the Safe Water Plan and a link to the document can be found at

https://www.waterboards.ca.gov/drinking_water/safedrinkingwaterplan/.

DDW continues to implement initiatives to address unsustainable water system consolidations, funding and installing water system administrators, and preventative measures to stop the establishment of unsustainable public water systems. The State Water Board is currently utilizing the SAFER program to identify water systems that are failing or at-risk, create new policy tools to address these systems and provide funding and expertise to support both interim and long-term solutions. Information about SAFER is available on the webpage here: <https://www.waterboards.ca.gov/safer/>.

DDW's Quality Assurance Section (QAS) continues to improve the quality of data that DDW receives from laboratories and public water systems, and the quality of the inventory data that DDW maintains in SDWIS-State. Within QAS, the Data Management Unit develops tools to increase efficiency in routine data cleanup activities to ensure data quality, the Data Support Unit facilitates information sharing within the DDW, with water systems, and with the public, and the Needs Analysis Unit works to identify failing and at-risk public water systems and develop analytical tools for proactive solutions.

DDW continues to work on a multi-year project to modernize the SDWA compliance data management system and integrate a multitude of compliance tracking tools into a single system.

Chapter 5. Conclusion

The State Water Board is the primacy agency responsible for the administration and enforcement of the SDWA requirements in California. The implementation of the program includes a range of activities and authorities including issuing operating permits, conducting inspections, monitoring for compliance with regulations, and taking enforcement action to compel compliance when violations are identified.

Overall, water systems in California have a high rate of compliance with drinking water standards. However, many public water systems continue to incur water quality violations as a result of contamination of drinking water sources. Arsenic, nitrate, and 1,2,3-TCP continue to impact communities in the state.

The State Water Board continues to track compliance, take enforcement actions to address violations, provide technical assistance to public water systems to address violations, provide funding assistance to public water systems that are capable of undertaking planning or construction projects in order to address violations, and compel public water systems that do not have adequate technical, managerial, and financial capacity to provide reliable and safe drinking water to its customers to consolidate with other public water systems that are able to provide safe drinking water.

Appendices

Appendix A: Definitions

Annual Report: A survey of public water systems, currently required annually, to collect critical water system information intended to assess the status of compliance with specific regulatory requirements such as source water capacity, provide updated contact and inventory information (such as population and number of service connections), and provide information that is used to assess the financial capacity of water systems, among other information reported.

Community Water System (CWS): A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents of the area served by the system.

Local Primacy Agency (LPA): A county who has been delegated authority to regulate small water systems. Although the delegation agreement is with the local county health officer, the regulatory program is typically operated by the Local Environmental Health Jurisdictions.

Nontransient Noncommunity Water System (NTNC): A public water system that is not a community water system and that regularly serves at least 25 of the same persons over six months per year.

pCi/L: Picocuries per liter, a measure of radioactivity.

ppb: Parts per billion, equivalent to about three seconds out of a century. Same as micrograms per liter (ug/L).

ppm: Parts per million, equivalent to about 32 seconds out of a year. Same as milligrams per liter (mg/L).

Public Water System (PWS): A system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves at least 25 people for at least 60 days each year.

Safe Drinking Water Act (SDWA): Under the 1974 federal SDWA and subsequent reauthorizations in 1986 and 1996, USEPA sets national limits on contaminant levels in drinking water for human consumption to protect the health of consumers.

Safe Affordable Funding for Equity and Resilience (SAFER): SAFER is designed to ensure Californians who lack safe, adequate, and affordable drinking water receive it as quickly as possible, and that the water systems serving them establish sustainable solutions. In doing so, SAFER minimizes the disproportionate environmental burdens experienced by some communities and advances justice for people of all incomes, races, and cultures.

Transient Noncommunity Water System (TNC): A noncommunity water system that does not regularly serve at least 25 of the same persons over six months per year.

Wholesale Water System: A public water system that supplies water to other public water systems for resale. Wholesale water systems are regulated as community water systems.

Appendix B: Health Effects Language

California Code of Regulations (CCR) Title 22 §64465 Appendix (A-H)

Microbiological Contaminants

Coliform Assessment and/or Corrective Action Violations: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. Coliforms indicate the need to look for potential problems in water treatment or distribution. When this occurs, PWSs are required to conduct assessment(s) to identify problems and to correct any problems that were found.

***E. coli* Assessment and/or Corrective Action Violations:** *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. A violation of the standard for *E. coli* indicates the need to look for potential problems in water treatment or distribution. When this occurs, PWSs are required to conduct a detailed assessment to identify problems and to correct any problems that are found.

Seasonal System Treatment Technique Violations: The Revised Total Coliform Rule (RTCR) requires seasonal public water systems to notify the State Water Resources Control Board or the Local Primacy Agency upon water system closure and complete a start-up procedure prior to serving water to the public at the beginning of each operating season.

Turbidity: Turbidity is a measure of the amount of suspended particles in the water. Algae, suspended sediment, and organic matter particles can cloud the water making it more turbid. Turbidity has no health effects. However, high levels of turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Surface Water Treatment

***Giardia lamblia*, Viruses, Heterotrophic plate count bacteria, *Legionella* *Cryptosporidium*:** Inadequately treated water may contain disease-causing

organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Radioactive Contaminants

Combined Radium 226/228: Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

Gross Beta particle activity: Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.

Strontium-90: Some people who drink water containing strontium-90 in excess of the MCL over many years may have an increased risk of getting cancer.

Total Radium (for nontransient noncommunity water systems): Some people who drink water containing radium 223, 224, or 226 in excess of the MCL over many years may have an increased risk of getting cancer.

Tritium: Some people who drink water containing tritium in excess of the MCL over many years may have an increased risk of getting cancer.

Uranium: Some people who drink water containing uranium in excess of the MCL over many years may have kidney problems or an increased risk of getting cancer.

Inorganic Contaminants

Aluminum: Some people who drink water containing aluminum in excess of the MCL over many years may experience short-term gastrointestinal tract effects.

Antimony: Some people who drink water containing antimony in excess of the MCL over many years may experience increases in blood cholesterol and decreases in blood sugar.

Arsenic: Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.

Asbestos: Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

Barium: Some people who drink water containing barium in excess of the MCL over many years may experience an increase in blood pressure.

Beryllium: Some people who drink water containing beryllium in excess of the MCL over many years may develop intestinal lesions.

Cadmium: Some people who drink water containing cadmium in excess of the MCL over many years may experience kidney damage.

Chromium: Some people who use water containing chromium in excess of the MCL over many years may experience allergic dermatitis.

Copper: Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time may experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years may suffer liver or kidney damage.

Cyanide: Some people who drink water containing cyanide in excess of the MCL over many years may experience nerve damage or thyroid problems.

Fluoride: Some people who drink water containing fluoride in excess of the federal MCL of 4 mg/L over many years may get bone disease, including pain and tenderness of the bones. Children who drink water containing fluoride in excess of the state MCL of 2 mg/L may get mottled teeth.

Lead: Infants and children who drink water containing lead in excess of the action level may experience delays in their physical or mental development. Children may show slight deficits in attention span and learning abilities. Adults who drink this water over many years may develop kidney problems or high blood pressure.

Mercury: Some people who drink water containing mercury in excess of the MCL over many years may experience mental disturbances, or impaired physical coordination, speech and hearing.

Nickel: Some people who drink water containing nickel in excess of the MCL over many years may experience liver and heart effects.

Nitrate: Infants below the age of six months who drink water containing nitrate in excess of the MCL may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant's blood to carry oxygen. Symptoms include shortness of breath and blueness of the skin.

High nitrate levels may also affect the oxygen-carrying ability of the blood of pregnant women.

Nitrite: Infants below the age of six months who drink water containing nitrite in excess of the MCL may become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blueness of the skin.

Perchlorate: Perchlorate has been shown to interfere with uptake of iodide by the thyroid gland, and to thereby reduce the production of thyroid hormones, leading to adverse effects associated with inadequate hormone levels. Thyroid hormones are needed for normal prenatal growth and development of the fetus, as well as for normal growth and development in the infant and child. In adults, thyroid hormones are needed for normal metabolism and mental function.

Selenium: Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years may experience hair or fingernail losses, numbness in fingers or toes, or circulation system problems.

Thallium: Some people who drink water containing thallium in excess of the MCL over many years may experience hair loss, changes in their blood, or kidney, intestinal, or liver problems.

Volatile Organic Contaminants

Benzene: Some people who use water containing benzene in excess of the MCL over many years may experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.

Carbon Tetrachloride: Some people who use water containing carbon tetrachloride in excess of the MCL over many years may experience liver problems and may have an increased risk of getting cancer.

1,2-Dichlorobenzene: Some people who drink water containing 1,2-dichlorobenzene in excess of the MCL over many years may experience liver, kidney, or circulatory system problems.

1,4-Dichlorobenzene: Some people who use water containing 1,4-dichlorobenzene in excess of the MCL over many years may experience anemia, liver, kidney, or spleen damage, or changes in their blood.

1,1-Dichloroethane: Some people who use water containing 1,1-dichloroethane in excess of the MCL over many years may experience nervous system or respiratory problems.

1,2-Dichloroethane: Some people who use water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.

1,1-Dichloroethylene: Some people who use water containing 1,1-dichloroethylene in excess of the MCL over many years may experience liver problems.

cis-1,2-Dichloroethylene: Some people who use water containing cis-1,2-dichloroethylene in excess of the MCL over many years may experience liver problems.

trans-1,2-Dichloroethylene: Some people who drink water containing trans-1,2-dichloroethylene in excess of the MCL over many years may experience liver problems.

Dichloromethane: Some people who drink water containing dichloromethane in excess of the MCL over many years may experience liver problems and may have an increased risk of getting cancer.

1,2-Dichloropropane: Some people who use water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.

1,3-Dichloropropene: Some people who use water containing 1,3-dichloropropene in excess of the MCL over many years may have an increased risk of getting cancer.

Ethylbenzene: Some people who use water containing ethylbenzene in excess of the MCL over many years may experience liver or kidney problems.

Methyl-tert-butyl ether: Some people who use water containing methyl-tert-butyl ether in excess of the MCL over many years may have an increased risk of getting cancer.

Monochlorobenzene: Some people who use water containing monochlorobenzene in excess of the MCL over many years may experience liver or kidney problems.

Styrene: Some people who drink water containing styrene in excess of the MCL over many years may experience liver, kidney, or circulatory system problems.

1,1,2,2-Tetrachloroethane: Some people who drink water containing 1,1,2,2-tetrachloroethane in excess of the MCL over many years may experience liver or nervous system problems.

Tetrachloroethylene: Some people who use water containing tetrachloroethylene in excess of the MCL over many years may experience liver problems, and may have an increased risk of getting cancer.

1,2,4-Trichlorobenzene: Some people who use water containing 1,2,4-trichlorobenzene in excess of the MCL over many years may experience adrenal gland changes.

1,1,1-Trichloroethane: Some people who use water containing 1,1,1-trichloroethane in excess of the MCL over many years may experience liver, nervous system, or circulatory system problems.

1,1,2-Trichloroethane: Some people who use water containing 1,1,2-trichloroethane in excess of the MCL over many years may experience liver, kidney, or immune system problems.

Trichloroethylene (TCE): Some people who use water containing trichloroethylene in excess of the MCL over many years may experience liver problems and may have an increased risk of getting cancer.

Toluene: Some people who use water containing toluene in excess of the MCL over many years may experience nervous system, kidney, or liver problems.

Trichlorofluoro-methane: Some people who use water containing trichlorofluoromethane in excess of the MCL over many years may experience liver problems.

1,1,2-Trichloro-1,2,2-trifluoroethane: Some people who use water containing 1,1,2-trichloro-1,2,2-trifluoroethane in excess of the MCL over many years may experience liver problems.

Vinyl Chloride: Some people who use water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.

Xylenes: Some people who use water containing xylenes in excess of the MCL over many years may experience nervous system damage.

Synthetic Organic Contaminants

2,4-D: Some people who use water containing the weed killer 2,4-D in excess of the MCL over many years may experience kidney, liver, or adrenal gland problems.

2,4,5-TP (Silvex): Some people who drink water containing Silvex in excess of the MCL over many years may experience liver problems.

Alachlor: Some people who use water containing alachlor in excess of the MCL over many years may experience eye, liver, kidney, or spleen problems, or experience anemia, and may have an increased risk of getting cancer.

Atrazine: Some people who use water containing atrazine in excess of the MCL over many years may experience cardiovascular system problems or reproductive difficulties.

Bentazon: Some people who drink water containing bentazon in excess of the MCL over many years may experience prostate and gastrointestinal effects.

Benzo(a)pyrene (PAH): Some people who use water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.

Carbofuran: Some people who use water containing carbofuran in excess of the MCL over many years may experience problems with their blood, or nervous or reproductive system problems.

Chlordane: Some people who use water containing chlordane in excess of the MCL over many years may experience liver or nervous system problems, and may have an increased risk of getting cancer.

Dalapon: Some people who drink water containing dalapon in excess of the MCL over many years may experience minor kidney changes.

Dibromochloro-propane (DBCP): Some people who use water containing DBCP in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.

Di (2-ethylhexyl) adipate: Some people who drink water containing di(2-ethylhexyl) adipate in excess of the MCL over many years may experience weight loss, liver enlargement, or possible reproductive difficulties.

Di (2-ethylhexyl) phthalate: Some people who use water containing di(2-ethylhexyl) phthalate well in excess of the MCL over many years may experience liver problems or reproductive difficulties, and may have an increased risk of getting cancer.

Dinoseb: Some people who drink water containing dinoseb in excess of the MCL over many years may experience reproductive difficulties.

Dioxin (2,3,7,8-TCDD): Some people who use water containing dioxin in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.

Diquat: Some people who drink water containing diquat in excess of the MCL over many years may get cataracts.

Endothall: Some people who drink water containing endothall in excess of the MCL over many years may experience stomach or intestinal problems.

Endrin: Some people who drink water containing endrin in excess of the MCL over many years may experience liver problems.

Ethylene dibromide (EDB): Some people who use water containing ethylene dibromide in excess of the MCL over many years may experience liver, stomach, reproductive system, or kidney problems, and may have an increased risk of getting cancer.

Glyphosate: Some people who drink water containing glyphosate in excess of the MCL over many years may experience kidney problems or reproductive difficulties.

Heptachlor: Some people who use water containing heptachlor in excess of the MCL over many years may experience liver damage and may have an increased risk of getting cancer.

Heptachlor epoxide: Some people who use water containing heptachlor epoxide in excess of the MCL over many years may experience liver damage, and may have an increased risk of getting cancer.

Hexachlorobenzene: Some people who drink water containing hexachlorobenzene in excess of the MCL over many years may experience liver or kidney problems, or adverse reproductive effects, and may have an increased risk of getting cancer.

Hexachlorocyclo-pentadiene: Some people who use water containing hexachlorocyclopentadiene in excess of the MCL over many years may experience kidney or stomach problems.

Lindane: Some people who drink water containing lindane in excess of the MCL over many years may experience kidney or liver problems.

Methoxychlor: Some people who drink water containing methoxychlor in excess of the MCL over many years may experience reproductive difficulties.

Molinate (Ordram): Some people who use water containing molinate in excess of the MCL over many years may experience reproductive effects.

Oxamyl (Vydate): Some people who drink water containing oxamyl in excess of the MCL over many years may experience slight nervous system effects.

PCBs (Polychlorinated biphenyls): Some people who drink water containing PCBs in excess of the MCL over many years may experience changes in their skin, thymus gland problems, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.

Pentachlorophenol: Some people who use water containing pentachlorophenol in excess of the MCL over many years may experience liver or kidney problems, and may have an increased risk of getting cancer.

Picloram: Some people who drink water containing picloram in excess of the MCL over many years may experience liver problems.

Simazine: Some people who use water containing simazine in excess of the MCL over many years may experience blood problems.

Thiobencarb: Some people who use water containing thiobencarb in excess of the MCL over many years may experience body weight and blood effects.

Toxaphene: Some people who use water containing toxaphene in excess of the MCL over many years may experience kidney, liver, or thyroid problems, and may have an increased risk of getting cancer.

1,2,3-Trichloropropane: Some people who drink water containing 1,2,3-trichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.

Disinfection Byproducts, Byproduct Precursors, and Disinfectant Residuals

Bromate: Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.

Chloramines: Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.

Chlorine: Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.

Chlorine dioxide: Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.

Control of DBP precursors (TOC): Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.

Haloacetic Acids: Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

TTHMs (Total Trihalomethanes): Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience liver, kidney, or central nervous system problems, and may have an increased risk of getting cancer.

Other Treatment Techniques

Acrylamide: Some people who drink water containing high levels of acrylamide over a long period of time may experience nervous system or blood problems, and may have an increased risk of getting cancer.

Epichlorohydrin: Some people who drink water containing high levels of epichlorohydrin over a long period of time may experience stomach problems, and may have an increased risk of getting cancer.

Appendix C: 2023 Violations Data and Definitions

Please see **acr-2023-dataset.xlsx** for the complete list of violations recorded in 2023.

Consumer Confidence Report (CCR): All community water systems and nontransient noncommunity water systems are required to deliver to their customers an annual report summarizing water quality data collected during the year. The report is to include educational material, provide information on the source water(s), levels of any detected contaminants, and any compliance issues with the drinking water regulations.

Disinfectants and Disinfection By-Products Rule (DBPR): The DBPR established MCLs for four by-products of drinking water disinfection - total trihalomethanes (TTHMs), haloacetic acids (HAA5), bromate, and chlorite; maximum residual disinfectant levels (MRDLs) for three disinfectants – chlorine, chloramine, and chlorine dioxide; TT requirements for the control of total organic carbon (TOC), a disinfection byproduct precursor in surface water sources using conventional surface water treatment; TT requirements for minimum disinfectant residual levels and TT requirements for certified treatment operators.

Groundwater Rule (GWR): The GWR establishes a risk-based approach to target groundwater systems that are vulnerable to fecal contamination. Groundwater systems that are identified as being at risk of fecal contamination must take corrective action to reduce potential illness from exposure to microbial pathogens.

Lead and Copper Rule (LCR): The LCR requires that “first draw” tap samples be collected for lead and copper analysis from sites (typically single-family homes or multi-family residences for CWSs) that are at risk of containing lead pipes or copper pipe with lead solder, or which may be served by a lead service line.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the public health goals (PHGs) Maximum Contaminant Level Goals (MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Monitoring and Reporting (M&R): A water system is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL. A monitoring violation occurs when a water system fails to have its water tested as required or fails to report test results correctly to the regulatory agency.

Operator Certification (OP): Failure of a PWS to have an operator certified by the state at the appropriate certification level.

Permit (PT): Operating without a valid permit.

Permit Condition (PC): Violation of a permit provision.

Point of Use/Point of Entry (POU/POE): Maximum contaminant level violation for treatment devices serving a single water tap or a single building.

Reporting Requirement (RR): Failure to submit a compliance report to the Drinking Water Program, including those related to the school lead sampling program or PFAS (California Health and Safety Code (CHSC) section 116277).

Revised Total Coliform Rule (rTCR): Specifies monitoring of the water in the distribution system for the presence of coliform bacteria. The rTCR became effective on July 1, 2021, in California to replace the Total Coliform Rule (TCR). Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful bacteria may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system.

Secondary Drinking Water Standards: MCLs for contaminants for aesthetics effects to protect the odor, taste, and appearance of drinking water. Contaminants with secondary MCLs (SMCL) are not considered to present a risk to human health at the SMCL.

Significant Consumer Notification Violations: For this report, a significant consumer notification violation is incurred if a community or nontransient noncommunity water system completely fails to provide its customers with the required annual CCR.

Significant Monitoring or Reporting Violations: For this report, significant monitoring or reporting violations are defined as when no samples were taken, or no results were reported.

Surface Water Treatment Rules (SWTR): These rules establish monitoring and reporting requirements, treatment techniques, performance standards, and

turbidity standards to be met by public water systems using surface water as a drinking water source. As used in this report, the term “surface water” also includes groundwater that has been determined to be under the direct influence of surface water (GWUDI).

Treatment Techniques (TT): A required process intended to reduce the level of a contaminant in drinking water in lieu of an MCL. For example, treatment techniques have been established for the treatment of surface waters in order to control the levels of viruses, bacteria, and other pathogens.

Variations and Exemptions: State Water Board permission to exceed an MCL or not comply with a TT under certain conditions.

Waterworks Standards (WW): Failure to comply with the California Waterworks Standards. Waterworks Standards pertain to reservoirs, tanks, distribution systems, and meeting maximum supply demands.